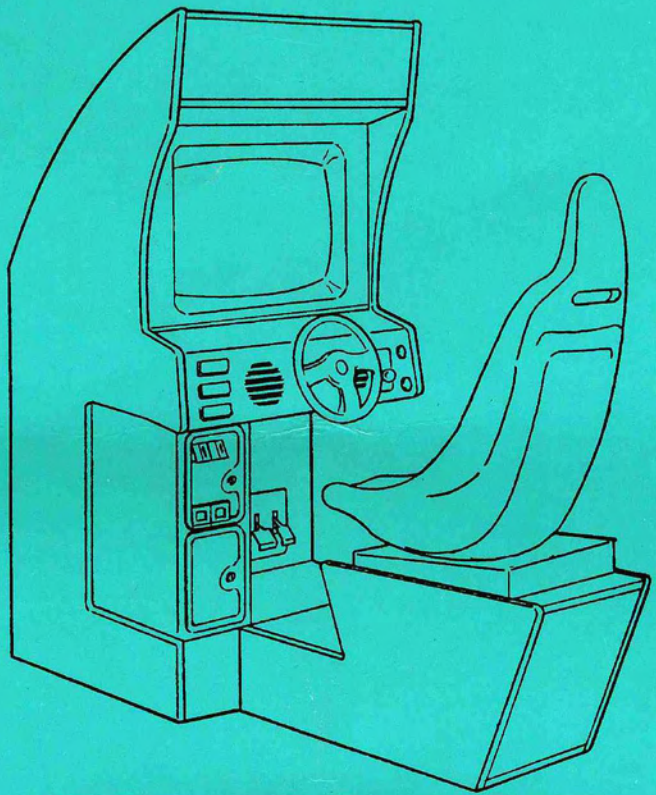
MIDWAY

January 1996
16-40036.1-101

CRUIS'N USA

SINGLE SIT DOWN



FINAL MANUAL

Operations Manual Includes:

Operations & Adjustments, Testing & Problem Diagnosis, Parts Information, Reference Diagrams & Schematics

Midway Manufacturing Company, 3401 North California Avenue, Chicago, Illinois 60618

DECLARATION OF CONFORMITY

MIDWAY MANUFACTURING CO., INC.

3401 N. CALIFORNIA AVE.
CHICAGO, IL 60618
U.S.A.

WE, HEREBY DECLARE UNDER SOLE RESPONSIBILITY THAT

THE MODEL: *"CRUIS'N USA" 40236, 40436, 41036 (VIDEO)*

TO WHICH THIS DECLARATION RELATES IS IN CONFORMITY WITH THE FOLLOWING EUROPEAN PRODUCT SAFETY DIRECTIVES:

ELECTROMAGNETIC COMPATABILITY DIRECTIVE
(89/336/EEC AND AMENDMENTS 91/C162/08, 92/31/EEC,93/68/EEC

AS IS VERIFIED BY COMPLIANCE WITH THE FOLLOWING STANDARDS:

EN5014: 1993	**EN61000-4-2: 1995**
IEC 801-3: 1984 (EN61000-4-3)	**EN61000-4-4: 1995**
EN61000-4-5: 1995	

Date issued: **DECEMBER 5, 1995**

MANUFACTURE'S SIGNATURE

DON HASSLER

V.P. MANUFACTURING

CRUIS'N USA

SINGLE SIT DOWN

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CRUIS'N USA

SINGLE SIT DOWN

SECTION
ONE

Operation

Safety Notices

The following safety instructions apply to all game operators and service personnel. Specific warnings and cautions will be found throughout this manual where they apply. We recommend that you read this page before preparing your game for play.

⚠ CAUTION

DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

AC POWER CONNECTION. Before connecting the game to the AC power source, verify that the "line voltage selection chart" jumper wires are installed correctly for the line voltage in your area. For details, refer to Section 3.

PROPERLY GROUND THE GAME. To avoid electrical shocks, do not plug in the game until it has been inspected and properly grounded. MIDWAY games should only be plugged into a grounded 3-wire outlet. Shocks will also result, if the control panel is not properly grounded! After servicing any parts on the panel, be sure that the ground wires are secure. Only then should you lock up the game.

DISCONNECT POWER DURING REPAIRS. To avoid electrical shock, disconnect the game from the AC power source before removing or repairing any part of the game.

USE THE PROPER FUSE. To avoid electrical shock, use the replacement fuse which is specified in the parts list for this game. The replacement fuse must match the original fuse in fuse type, voltage rating, and current rating.

MONITOR PRECAUTIONS. When removing or repairing the monitor, extra precautions must be taken to avoid electrical shock. High voltages may exist within the monitor circuitry and cathode ray tube (CRT) even after power has been disconnected. Do not touch internal parts of the monitor with your hands or metal objects! Always discharge the CRT by the following method: Attach one end of a large, well-insulated, 20-kv jumper to ground. Momentarily touch the free end of the grounded jumper to the anode by sliding it under the anode cap. Wait two minutes and discharge the anode again.

HANDLE FLUORESCENT TUBE AND CRT WITH CARE. If you drop a fluorescent tube or CRT and it breaks, it will implode! Shattered glass can fly eight feet or more from the implosion.

ATTENTION!

PROPERLY ATTACH ALL CONNECTORS. *Make sure that the connectors on each printed circuit board (PCB) are properly connected. If the connectors do not slip on easily, do not force them. A reversed connector may damage your game and void the warranty. All connectors are keyed to fit specific pins on each board.*

Setup Procedure

Game Location Requirements

Power: Domestic 115V @ 60 Hz, 15 Amps
Foreign 230V @ 50 Hz, 7 Amps
Japan 100V @ 50 Hz, 15 Amps

Dimensions (assembled): Width: 30"
Depth: 61"
Height: 67"

Temp.: 32° F to 100° F
(0° C to 38° C)

Humidity: Not to exceed 95% relative.

Weight: Pedestal (crated) 95 Lbs.
Game (crated) 395 Lbs.

Installation And Inspection

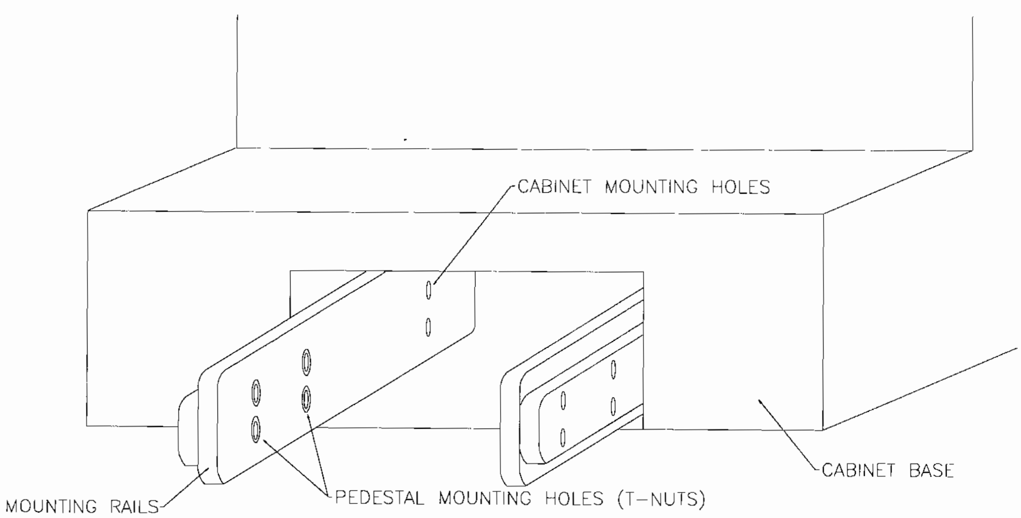
1. Remove all items from shipping containers and set them aside. Inspect the exterior of the cabinet for any signs of damage. Remove shipping cleats from the bottom of the cabinet. Remove pedestal mounting rails packed inside seat liner.

2. Remove keys from the taped coin return slot. Unlock and open the coin and cash box doors. (Leg levelers and spare parts are stored in the cash box).

3. Tilt or lay the cabinet down. Locate two threaded holes on the bottom of the cabinet and install one leg leveler (with its hex nut) in each hole.

4. Stand cabinet upright and make certain it is in a stable position. Level the cabinet.

5. Leg levelers come installed on the pedestal assembly and need only to be leveled before installing onto the cabinet assembly.



6. Attach mounting rails to cabinet base using four 1/4-20 hex-head bolts (see above diagram for proper placement). Do not tighten bolts completely, some movement is required in the mounting rails to align holes with pedestal assembly.

7. Place pedestal assembly on mounting rails. Align the holes and carefully pull the pedestal away. Hold mounting rails in position and tighten bolts inside cabinet.

8. Connect speaker wire from inside pedestal to cabinet. Attach pedestal assembly and bolt together using eight 1/4-20 tamper proof screws. Use the T27 wrench, included in the spare parts, to install these screws.

9. Remove rear door of cabinet. Inspect cabinet interior for any signs of damage. Check all major assemblies to assure that they are mounted securely.

10. Refer to the games Cabinet Wiring Diagram (section 3), and check to see that all cable connectors are correctly secured. DO NOT FORCE CONNECTIONS. Watch for damaged connectors and avoid making reversed connections.

11. Determine the value of your line voltage with a meter. Then, check the jumper wire to the main power supply transformer. Be sure it is jumpered to correspond to your local line voltage value. If necessary, change the jumper wire to the transformer in accordance with the Jumper Chart in Section Three.

12. Replace rear cabinet door and screw (lock) it securely. NOTICE: Tamper proof screws are included with the spare parts. These screws are optional and may be used to secure the rear door panel. The T20 wrench is used for the installation of these screws. Close and lock the front coin and cash box doors.

13. To attach line cord, the four Phillips-head screws that mount the line cord cover plate to the rear cabinet. Match the prongs on the plug with the holes in the receptacle and push line cord securely into place. Make sure cord aligns with the indentation of plate (indentation should point toward bottom of cabinet). Remount line cord cover plate. If desired, tamper resistant screws are provided to remount cover plate.

14. Connect the line cord to a grounded (3-terminal) AC wall outlet.

15. Switch ON the game using the ON/OFF switch located on the upper left top of the cabinet, to verify proper operation.

SERVICING

Always turn off power to game before servicing.

- **Control Panel**
  Using the T27 wrench, remove four tamper proof screws from the monitor glass retaining bracket, and set bracket aside. Remove four tamper proof screws from under the control panel. Pull control panel out and disconnect the wiring. Before reinstalling the control panel, check for proper wire connections, including ground strap.

- **Seat**
  Using the T27 tamper proof wrench, remove three screws from each side of the seat mounting plate. Lift the seat/mounting plate off the pedestal assembly and place the seat on its back, on a flat surface. The six bolts under the mounting plate can now be removed to replace the seat.

- **Seat Slide Assembly**
  Using the T27 tamper proof wrench, remove three screws from each side of the seat mounting plate. Lift the seat/mounting plate off the pedestal assembly and set aside. Slide the seat assembly forward, and remove the two tamper proof torque screws from the wood panel on top of the pedestal assembly. Slide the seat back and remove the two front torque screws. Lift the wood panel out of the pedestal base and turn the unit over. Remove the four nuts holding the wood panel to the slide assembly. Place the wood panel aside and the slide assembly can be easily accessed.

- **Speakers**
  Control Panel: Two speakers are located behind the control panel. Using the T27 wrench, remove four tamper proof screws from the monitor glass retaining bracket, and set bracket aside. Remove four tamper proof screws from under the control panel. Pull control panel out and disconnect the wiring. The speakers can now be accessed from the back of the control panel assembly.

  Seat: One speaker is located under the seat. Slide the seat assembly forward. Using the T27 wrench remove the two tamper proof torque screws from the wood panel on top of the pedestal assembly. Slide the seat back and remove the two front torque screws. Lift seat assembly and set aside. The speaker can now be accessed from the inside of the pedestal assembly.

- **Viewing Glass**
  Using the T27 wrench, remove four tamper proof screws holding the monitor glass retaining bracket, and set bracket aside. Carefully raise the glass from the bottom grooved edge and lift it clear of cabinet.

- **Monitor Bezel**
  Using the T27 wrench, remove four tamper proof screws holding the monitor glass retaining bracket, and set bracket aside. Carefully raise the glass from the bottom edge and lift it clear of cabinet. Set it aside. The monitor bezel can now be removed by lifting it out of the grooved edge at the bottom.

- **Marquee Glass**
  Remove five 1/4" hex-head wood screws holding the plastic strip above marquee glass. Set strip aside and carefully lift glass. Store glass carefully to prevent damage.

- **Fluorescent Light Assembly**
  Remove five 1/4" hex-head wood screws holding the plastic strip above marquee glass. Set strip aside and carefully lift glass. Store glass carefully to prevent damage. Disconnect the fluorescent light assembly from its power cable. Remove the screws fastening the assembly to the cabinet and lift out the assembly.

WARNING
If a fluorescent tube drops and it breaks, it will implode!
Use care in handling.

- **Fluorescent Lamp**
  Remove five 1/4" hex-head wood screws holding the plastic strip above marquee glass. Set strip aside and carefully lift glass. Store glass carefully to prevent damage Remove the fluorescent lamp retainer brackets. Grasp the tube, give it a quarter turn and remove it from its socket. Carefully place a new tube into the socket and turn to reinstall.

- **Monitor**
  We recommend that you read the WARNINGS section thoroughly before beginning this procedure.
  Switch OFF power to the game. Remove the viewing glass and the monitor bezel. Completely disconnect the monitor from all of its cabling, including its chassis ground strap.
  Remove the six flange nuts securing the monitors mounting flanges to its mounting panel. Pull the monitor carefully from the cabinet front.

⚠**CAUTION** *While removing the four flange nuts, firmly support the monitor from the front of the CRT so that it will not slip.*

⚠**CAUTION** *The monitor DOES NOT contain an isolation transformer in its chassis. It is mounted instead in the Power Chassis Assembly locate on the floor of the Cabinet. When servicing the monitor on a test bench, YOU MUST ISOLATE THE MONITOR FROM THE LINE VOLTAGE WITH AN ISOLATION TRANSFORMER.*

Game Features

Cruis'n USA is a one player game.

Starting Up

Switch ON power to the game. A "rug" pattern appears on the CRT screen. When the "rug" pattern ends, the screen shows a CPU Board map. Bad chips are indicated in red, good chips are in green. The software revision level is shown at the top of the screen.

NOTE: When an error is detected during Start-up Tests, game start-up does not progress, and an error message appears on the screen.

Insert the desired amount of coins or tokens.

Player Controls

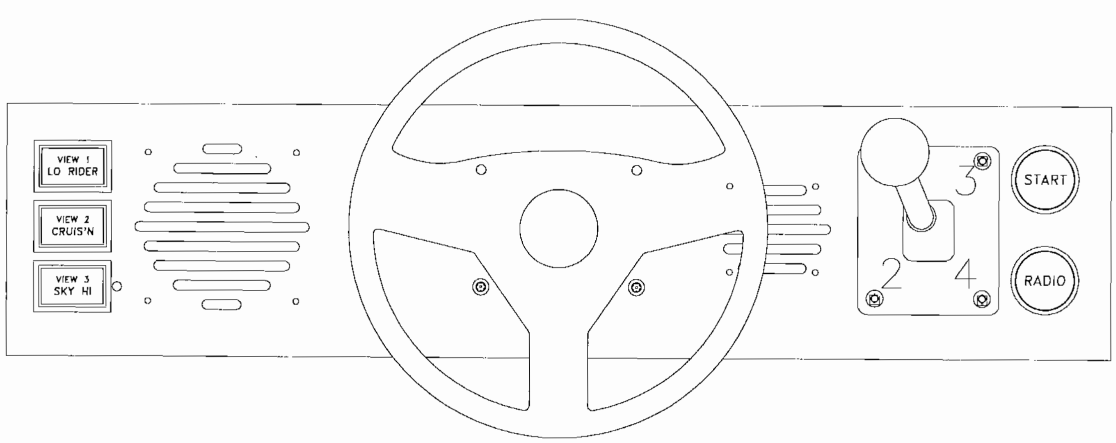
- **Start Button (Green)**
  The start button allows the player to begin game play.

- **Radio Button (Orange)**
  The radio button allows the player to turn radio sounds on and off, and change stations.

- **View 1-Lo Rider Button (Red)**
  View 1 drives the car from inside.

- **View 2-Cruis'n Button (White)**
  View 2 drives the car from directly behind.

- **View 3-Sky Hi Button (Blue)**
  View 3 drives the car from an aerial view.



Game Operation

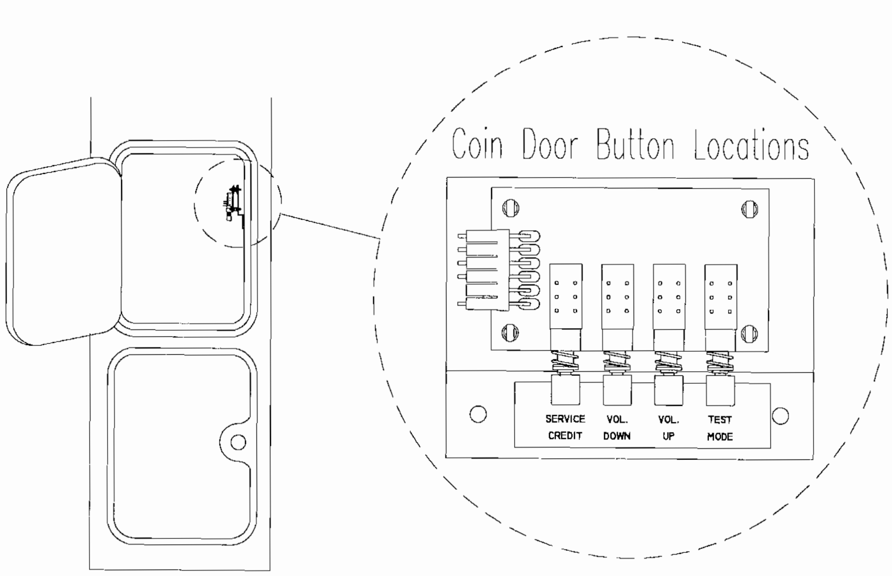
The Cruis'n' USA Control Switches are located inside the coin door. These switches allow the operator to customize some features of the game.

CABINET SWITCHES

- The **SLAM TILT SWITCH** detects any forceful vibrations against the Coin Door. This eliminates pounding for free games. It is located on the inside of the coin door.
- The **ON/OFF SWITCH** is located on the top right side of the cabinet.

CONTROL SWITCHES

- The **TEST MODE SWITCH** activates the games Menu System. Press the Test Mode Switch to access the Main Menu. To exit the menu system, use the Volume Down Switch and select EXIT TO GAME OVER from the Main Menu, then press the Test Mode Switch or use the Service Credit Switch.
- The **VOLUME UP SWITCH** moves up through the menu selections or adjustment choices, and raises the sound level of the game when in game play.
- The **VOLUME DOWN SWITCH** moves down through the menu selections or adjustment choices, and lowers the sound level of the game when in game play.
- The **SERVICE CREDIT SWITCH** is a special feature switch that allots credit without affecting the game's bookkeeping total and is used to get out of a menu selection or return to the main menu.



Menu System Operation

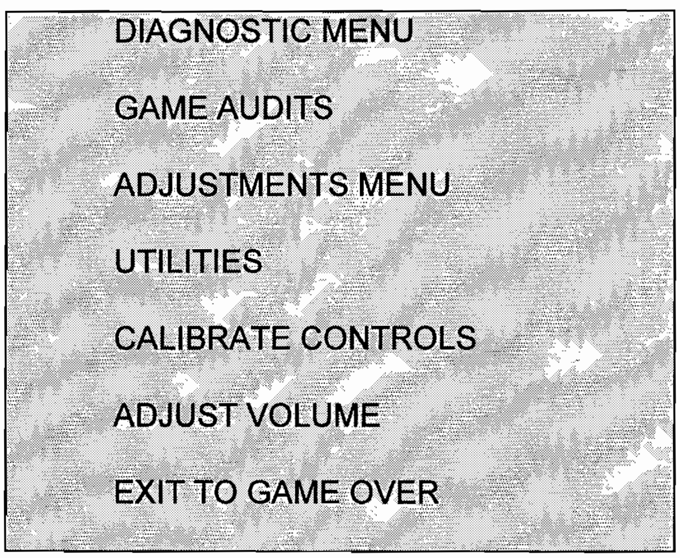
OPERATION

All CRUIS'N' USA Game Audits, Adjustments, and Diagnostics are options of the Main Menu. Each option, in turn, has its own menu, listing several choices that may be acted upon as desired.

Press the Test Mode Switch to activate the Main Menu (shown below). Game adjustments, bookkeeping, and diagnostics are all accessible from this menu.

Press the Volume Up Switch or Volume Down Switch to cycle through the menu options. Notice that the options are highlighted in sequence. Press Test Mode Switch to activate a highlighted option.

Note: Only highlighted options can be activated.



Main Test Menu

DIAGNOSTIC MENU

To enter the Diagnostic Menu from the Main Menu, press the Volume Up or Down Switch to highlight the option, then press the Test Mode Switch to activate. To exit the Diagnostic Menu, press the Volume Up or Down Switch to highlight EXIT TO MAIN MENU or press the Service Credit Switch.

SWITCH TEST

DIP SWITCH TEST

CPU BOARD TEST

SOUND BOARD TEST

STEERING WHEEL TEST

MONITOR TEST

BURN-IN TEST

MOTION MENU

LAMP TEST

EXIT TO MAIN MENU

Diagnostic Menu

Switch Test

The Switch Test allows the operator to test the switches on the control panel and the coin door.

Select the Switch Test by pressing the Volume Up or Down Switch to highlight the option; then press Test Mode Switch to activate. Pressing a switch on the control panel or coin door causes the corresponding switch location on the screen to light.

Press the Test Mode Switch to return to the Diagnostic Menu.

Dip Switch Test

The DIP Switch Test allows the operator to check the location of the two 8-position DIP switches on the CPU Board. The operator can also change the setting of each position of each DIP Switch during this mode.

To enter the test, press the Volume Up or Down Switch to highlight the DIP Switch Test; then, press the Test Mode Switch to activate. The screen displays a layout of their current settings.

To change a DIP Switch setting, move the switch to the desired setting, then check the screen to verify that the switch now shows the new setting.

Press Test Mode Switch to return to the Diagnostic Menu.

DIP Switch 2 Settings Table (U97)

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
NOT USED	OFF* ON							
MOTION OFF MOTIN ON		OFF* ON						
STAND UP SIT DOWN			OFF ON*					
NOT USED				OFF* ON	OFF* ON			
LINK OFF LINK ON						OFF* ON		
NOT USED							OFF* ON	
SLAVE MASTER								OFF* ON

DIP Switch 3 Settings Table (U19)

COIN MODE	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
USA1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
USA3	OFF	OFF	OFF	OFF	OFF	ON	OFF	
USA7	OFF	OFF	OFF	OFF	OFF	OFF	ON	
USA8	OFF	OFF	OFF	OFF	OFF	ON	ON	
GERMAN1	ON	OFF	OFF	OFF	OFF	OFF	OFF	
GERMAN2	ON	OFF	OFF	OFF	OFF	ON	OFF	
GERMAN3	ON	OFF	OFF	OFF	OFF	OFF	ON	
GERMAN4	ON	OFF	OFF	OFF	OFF	ON	ON	
FRENCH1	OFF	ON	OFF	OFF	OFF	OFF	OFF	
FRENCH2	OFF	ON	OFF	OFF	OFF	ON	OFF	
FRENCH3	OFF	ON	OFF	OFF	OFF	OFF	ON	
FRENCH4	OFF	ON	OFF	OFF	OFF	ON	ON	
CANADA1	ON	ON	OFF	OFF	OFF	OFF	OFF	
CANADA2	ON	ON	OFF	OFF	OFF	ON	OFF	
CANADA3	ON	ON	OFF	OFF	OFF	OFF	ON	
SWISS1	OFF	OFF	ON	OFF	OFF	OFF	OFF	
SWISS2	OFF	OFF	ON	OFF	OFF	ON	OFF	
SWISS3	OFF	OFF	ON	OFF	OFF	OFF	ON	
ITALY1	ON	OFF	ON	OFF	OFF	OFF	OFF	
ITALY2	ON	OFF	ON	OFF	OFF	ON	OFF	
ITALY3	ON	OFF	ON	OFF	OFF	OFF	ON	
UK1	OFF	ON	ON	OFF	OFF	OFF	OFF	
UK2	OFF	ON	ON	OFF	OFF	ON	OFF	
UK3	OFF	ON	ON	OFF	OFF	OFF	ON	
SPAIN1	ON	ON	ON	OFF	OFF	OFF	OFF	
SPAIN2	ON	ON	ON	OFF	OFF	ON	OFF	
SPAIN3	ON	ON	ON	OFF	OFF	OFF	ON	
SPAIN4	ON	ON	ON	OFF	OFF	ON	ON	
AUSTRALIA1	OFF	OFF	OFF	ON	OFF	OFF	OFF	
AUSTRALIA2	OFF	OFF	OFF	ON	OFF	ON	OFF	
AUSTRALIA3	OFF	OFF	OFF	ON	OFF	OFF	ON	
AUSTRALIA4	OFF	OFF	OFF	ON	OFF	ON	ON	
JAPAN1	ON	OFF	OFF	ON	OFF	OFF	OFF	
JAPAN2	ON	OFF	OFF	ON	OFF	ON	OFF	
JAPAN3	ON	OFF	OFF	ON	OFF	OFF	ON	
TAIWAN1	OFF	ON	OFF	ON	OFF	OFF	OFF	
TAIWAN2	OFF	ON	OFF	ON	OFF	ON	OFF	
TAIWAN3	OFF	ON	OFF	ON	OFF	OFF	ON	
AUSTRIA1	ON	ON	OFF	ON	OFF	OFF	OFF	
AUSTRIA2	ON	ON	OFF	ON	OFF	ON	OFF	
AUSTRIA3	ON	ON	OFF	ON	OFF	OFF	ON	
AUSTRIA4	ON	ON	OFF	ON	OFF	ON	ON	
BELGIUM1	OFF	OFF	ON	ON	OFF	OFF	OFF	
BELGIUM2	OFF	OFF	ON	ON	OFF	ON	OFF	
BELGIUM3	OFF	OFF	ON	ON	OFF	OFF	ON	
SWEDEN1	OFF	OFF	OFF	OFF	ON	OFF	OFF	
FINLAND1	ON	OFF	OFF	OFF	ON	OFF	OFF	
NETHERLAND1	OFF	ON	OFF	OFF	ON	OFF	OFF	
NETHERLAND2	OFF	ON	OFF	OFF	ON	ON	OFF	
NORWAY1	ON	ON	OFF	OFF	ON	OFF	OFF	
DENMARK1	OFF	OFF	ON	OFF	ON	OFF	OFF	
HUNGARY1	ON	OFF	ON	OFF	ON	OFF	OFF	
GENERAL1	ON	ON	ON	OFF	ON	OFF	OFF	
GENERAL3	ON	ON	ON	OFF	ON	ON	OFF	
GENERAL5	ON	ON	ON	OFF	ON	OFF	ON	
GENERAL7	ON	ON	ON	OFF	ON	ON	ON	
COIN COUNTER MODE								
ONE COUNTER								OFF*
TWO COUNTERS								ON

*Factory Default

Note: Switches 1 thru 5 select country. Switches 6 & 7 select one of four modes in the country.

CPU Board Test

The CPU Board Test (much like the Start-up Test) allows the operator to check the RAMs and ROMs.

Highlight the CPU Board Test with the Volume Up or Down Switch; then, press the Test Mode Switch to activate. When this test is activated, a "rug" pattern appears on the screen. The screen then changes to show the layout of the RAMs and ROMs on the CPU. Any chip that is shown as gray with a white outline and should turn green during the CPU Test. During the test, chips are good if they turn green; they are faulty if they turn red.

Sound Board Test

The Sound Test allows listening to some of the sounds that Cruis'n' USA is capable of producing.

To enter the test, press the Volume Up or Down Switch to highlight the Sound Board Test; then, press the Test Mode Switch to activate.

Press the Volume Up Switch to change the music selection. Press the Volume Down Switch to trigger a sound effect. Press the Test Mode Switch to exit to the Diagnostic Menu.

Steering Wheel Test

The Steering Wheel Test allows the operator to check the left to right movement of the steering wheel.

Before proceeding, make sure hands and any other objects are clear of the steering wheel. Upon entering this test, the steering wheel will automatically turn to the left to begin the testing procedure.

Highlight the Steering Wheel Test with the Volume Up or Down Switch; then, press the Test Mode Switch to activate. The steering wheel turns to the left. Press the Test Mode Switch and it turns to the right. Press Test Mode Switch again to return to the Diagnostic Menu.

Monitor Patterns
The Monitor Patterns Test provides a menu for testing the monitor. Highlight the test with the Volume Up or Down Switch and activate with the Test Mode Switch. Continue pressing the Test Mode Switch to cycle through the test and automatically return to the Main Menu.

The **COLOR BARS** test fills the screen with several gradated colors to help with red, green and blue level adjustments. Each color should appear sharp and clear.

The **RED, GREEN,** and **BLUE SCREEN** tests fill the screen with either red, green or blue.

The **CROSSHATCH PATTERNS** test fills the screen with a grid and should be clear.

If any of the Monitor Pattern Tests shows a need for adjustment, use the proper white knobs on the Monitor Board.

Burn-in Test
The Burn-in Test continually repeats the CPU Board Test. Press the Volume Up or Down Switch to highlight the Burn-in Test; then, press the Test Mode Switch activate. When the Burn-in Test detects an error, the test stops and displays an error message on the screen. Use this test to find intermittent CPU problems.

To exit this test, switch the game OFF then ON again.

Motion Test (Not Used)

Lamp Test
The Lamp Test allows the operator to test the lamps on the control panel.

To enter the test, press the Volume Up or Down Switch to highlight the Lamp Test; then, press the Test Mode Switch to activate.

Press the Volume Up or Down Switch to highlight lamp selections, then press the Test Mode Switch to activate that lamp.

To exit, press the Volume Up or Down Switch to highlight EXIT TO MAIN MENU; then, press Test Mode Switch to activate, or press the Service Credits Switch.

GAME AUDITS

To enter Game Audits from the Main Menu, press the Volume Up or Down Switch to highlight the option; then, press the Test Mode Switch to activate. To advance to the next page of the Game Audit Table, press the Volume Up or Down Switch. Press the Test Mode Switch to exit.

The Game Audits Table records the game play statistics. The left side of the table names the Audit item; the right side shows the amount of play.

LEFT COIN	0
RIGHT COIN	0
THIRD COIN	0
FOURTH COIN	0
SERVICE CREDITS	0
TOTAL STARTS	0
TOTAL CONTINUES	0
FREE RACES	0
EXPIRED RACES	0
FREE RACE PERCENTAGE	0
POWER ON TIME SECS	0
GAME TIME SECS	0
AVERAGE GAME TIME SECS	0

Page 1 of Audit Table

AUTOMATIC SELECTED	0
MANUAL SELECTED	0
63 MUSCLE SELECTED	0
LABOMBA SELECTED	0
DEVASTATOR SELECTED	0
ITALIA SELECTED	0
JEEP SELECTED	0
COPCAR SELECTED	0
VIEW1 TIME SECS	0
VIEW2 TIME SECS	0
VIEW3 TIME SECS	0

Page 2 of Audit Table

EVENT	0
U-GAMES	0
WATCHDOGS	0
BURNIN LOOPS	0
GAME DIFFICULTY	0

Page 3 of Audit Table

SELECT ARIZONA	0
SELECT US101	0
SELECT LA	0
SELECT IOWA	0
SELECT DEATH VALLEY	0
SELECT USA	0
SELECT BEVHILLS	0
SELECT APPALACHIA	0
SELECT REDWOOD	0
SELECT RUSHMORE	0
SELECT CHICAGO	0
SELECT SANFRAN	0
SELECT INDIANA	0
SELECT GGATE	0

Page 4 of Audit Table

START GGATE	0
START SF	0
START US101	0
START REDWOOD	0
START BEVHILLS	0
START LA	0
START DV	0
START ARIZONA	0
START GC	0
START IOWA	0
START CHICAGO	0
START INDIANA	0
START APPALACHIA	0
START DC	0

Page 5 of Audit Table

GGATE WINS	0
SANFRAN WINS	0
US101 WINS	0
REDWOOD WINS	0
BEVHILLS WINS	0
LA WINS	0
DEATHVALLEY WINS	0
ARIZONA WINS	0
GRAND CANYON WINS	0
IOWA WINS	0
CHICAGO WINS	0
INDIANA WINS	0
APPALACHIA WINS	0
DC WINS	0

Page 6 of Audit Table

ADJUSTMENTS MENU

NOTE: Game Adjustments are explained in more detail on the following page.

Press the Volume Up or Down Switch to highlight the Adjustments Menu option on the Main Menu; then, press the Test Mode Switch to activate.

The Adjustments Menu option allows the owner/operator to change the Game Pricing and Game Difficulty.

The Adjustments Menu offers several options. Press the Volume Up or Down Switch to highlight an option; then, press the Test Mode Switch to activate. The activated item provides a setting choice. Press the Volume Up or Down Switch to change the current setting value. After an item has been changed a confirmation box appears. For example:

SELECT THIS PRICING? ARE YOU SURE?	
YES	NO

Press the Volume Up or Down Switch to YES or NO, then press the Test Mode Switch to lock in the new setting.

STANDARD PRICING
CUSTOM PRICING
FREE PLAY
FIRST PLACE AWARDS FREE GAME
START TIME BONUS SECS
TIME SECS
ATTRACT MODE SOUND
HIGH SCORE ENTRY
MIN VOLUME LEVEL
SPEED IN MPH OR KPH
SHOW ROADKILL
SHOW PRESIDENT
SHOW GIRLS
HIGH SCORE DIFFICULTY
MAX CREDITS
EXIT TO MAIN MENU

Game Adjustment Menu

To exit the Adjustments Menu, press the Volume Up or Down Switch to highlight EXIT TO MAIN MENU; then, press Test Mode Switch to activate, or press the Service Credits Switch.

Standard Pricing

Standard Pricing allows the operator to choose any of the "Standard" selections for the Standard Pricing Table.

Custom Pricing
Custom Pricing allows the operator to install pricing other than that of the Standard Pricing Table. Custom Pricing also allows the operator to select the amount of credits required to start a game and the amount of credits required to continue a game. This option is adjusted from the Dip Switch Settings.

Free Play
This option selects free play. The setting choices for this adjustment are:

- -Off **(factory setting)**
- -On

First Place Awards Free Game
Awards a player a free game on 1st position. The setting choices for this adjustment are:

- -On **(factory setting)**
- -Off

Start Time Bonus Secs
This determines the initial time a player is given to finish a race. The setting range is:

-Maximum:	90
-Minimum:	60
-Factory Setting:	**75**

Checkpoint Bonus Time Secs
This awards the player a time bonus for passing a checkpoint.

-Maximum:	10
-Minimum:	25
-Factory Setting:	**20**

Attract-Mode Sound
This determines whether the game will make sounds in the attract mode. The settings for this adjustment are:

- -On
- -Off **(factory setting)**

High Score Entry
This determines whether the game will allow High Score Entry and Display Table. The setting choices are:

- -On **(factory setting)**
- -Off

Min Volume Level
This determines the minimum level allowed when setting the volume of the Sound Board. The setting range is:

- -Maximum: 30
- -Minimum: 0
- **-Factory Setting: 11**

Speed in MPH or KPH
This determines speedometer setting in miles per hour or kilometers per hour.

- -MPH **(factory setting)**
- -KPH

Show Road Kill
This determines whether the game will show road kill. The settings are:

- -On **(factory setting)**
- -Off

Show President
This determines whether the game will show the president. The settings are:

- -On **(factory setting)**
- -Off

Show Girls
This determines whether the game will show girls. The settings are:

- -On **(factory setting)**
- -Off

High Score Reset
The number of games played before an automatic reset of High Score occurs. The setting range is1000 to 25,000.

- **-Factory Setting: 5000**

Game Difficulty
This allows the operator to select the difficulty level of the game. The setting range is::

- -Easiest: 0
- -Hardest: 9
- **-Factory Setting: 5**

Max Credits
This determines the maximum credits allowed to begin a game. The setting range is:

- -Maximum: 10
- -Minimum: 30
- **-Factory Setting: 30**

Wheel Sensitivity
This controls the responsiveness of the steering wheel. The setting range is:

- -Maximum: 5
- -Minimum: 1
- **-Factory Setting: 5**

Standard Pricing Table

Name	Settings Credit/Coin	Left Chute	Center Chute	Right Chute	Fourth Chute
USA1	1/3X25	.25	.25	.25	$1.00
USA2	1/2X25	.25	.25	.25	$1.00
USA3	1/4X25	.25	.25	.25	$1.00
USA4	1/5X25	.25	.25	.25	$1.00
USA5	1/6X25	.25	.25	.25	$1.00
USA6	1/8X25	.25	.25	.25	$1.00
USA7	1/8X25, 1/2X100, 3/500	.25	.25	.25	$1.00
USA8	1/25, 3X25/START, 2X25 CONT	.25	.25	.25	$1.00
USA9	1/25, 2X25/START, 1/25 CONT	.25	.25	.25	$1.00
USA10	200/START, 150 CONT	.25	.25	.25	$1.00
USA11	1/6X25, 4/500	.25	.25	.25	$1.00
USA12	100/START, 3X25/CONT	.25	.25	.25	$1.00
GERMAN1	1/3X1DM, 2/5DM	1DM		5DM	
GERMAN2	1/1DM, 5/5DM	1DM		5DM	
GERMAN3	1/2X1DM, 3/5DM	1DM		5DM	
GERMAN4	2/5DM, 1/3X1DM ECA	5DM	1DM	2DM	
GERMAN5	3/5DM, 1/2DM, 1/2X1DM ECA	5DM	1DM	2DM	
GERMAN6	1/3X1DM, 2/5DM NO BONUS	1DM		5DM	
GERMAN7	1/2X1DM, 3/5DM NO BONUS	1DM		5DM	
GERMAN8	1/1DM, 6/5DM NO BONUS	1DM		5DM	
FRENCH1	1/10F, 2/20F, 4/30	10F		20F	
FRENCH2	1/10F, 2/20F, 5/40F	10F		20F	
FRENCH3	1/10F, 3/20F, 7/40F	10F		20F	
FRENCH4	1/5F, 2/10F, 5/20F	5F		10F	
FRENCH5	1/5F, 3/10F, 7/20F	5F		10F	
FRENCH6	1/10F 2/20F, 4/30F ECA	1F	10F	5F	20F
FRENCH7	1/10F 2/20F, 5/40F ECA	1F	10F	5F	20F
FRENCH8	1/10F 3/20F, 7/40F ECA	1F	10F	5F	20F
FRENCH9	1/5F 2/10F, 5/20F ECA	1F	10F	5F	20F
FRENCH10	1/5F 3/10F, 7/20F ECA	1F	10F	5F	20F
FRENCH11	1/3X5F, 4/50F	5F		10F	
CANADA1	1/2X25, 2/100	.25		$1.00	
CANADA2	1/4X25, 1/100	.25		$1.00	
CANADA3	1/4X25, 1/100, 3/2X100	.25		$1.00	
SWISS1	1/3X1F, 2/5F	1F		5F	
SWISS2	1/1F, 5/5F	1F		5F	
SWISS3	1/2X1F, 3/5F	1F		5F	
ITALY1	1/500LIRE	500 LIRE		500 LIRE	
ITALY2	1/2X500LIRE	500 LIRE		500 LIRE	
ITALY3	1/4X500LIRE	500 LIRE		500 LIRE	
UK1	2/100P, 1/50P, ECA	100P	20P	50P	10P
UK2	1/100P, 1/2X50P, ECA	100P	20P	50P	10P
UK3	1/3X20P, 1/50P	20P		50P	
SPAIN1	1/100PESETA, 6/500PESETA	100P		500P	
SPAIN2	3/2X100PESETA, 7/500PESETA	100P		500P	
SPAIN3	100PESETA, 5/500PESETA	100P		500P	
SPAIN4	1/2X100PESETA, 3/500PESETA	100P		500P	
SPAIN5	2/100PESETA, 10/500PESETA	100P		500P	
SPAIN6	1/100PESETA ECA	25P	200P	100P	500P
AUSTRALIA1	1/5X20, 1/100	.20		$1.00	
AUSTRALIA2	1/10X20, 1/2X100	.20		$1.00	
AUSTRALIA3	1/2X100	$1.00		$2.00	
AUSTRALIA4	1/3X100	$1.00		$2.00	

Custom Pricing

COIN SLOT (1) UNITS
COIN SLOT(2) UNITS
COIN SLOT(3) UNITS
COIN SLOT(4) UNITS
BONUS UNITS
MINIMUM UNITS
UNITS TO START
SELECT CUSTOM PRICING
SHOW FRACTION
EXIT TO MAIN MENU

Coin Slot (1) Unit:
Coin Slot (2) Unit:
Coin Slot (3) Unit:
Coin Slot (4) Unit: Coins inserted accumulate units. This adjustment specifies the number of units given for each coin in each chute (see "units/credit").

Bonus Units: One bonus credit is awarded after this many coin units have accumulated.

Minimum Units: No credits will be awarded until this many coin units have accumulated.

Units to Start: Units needed for one credit.

Select Custom Pricing: When set to yes custom pricing is enabled.

Show Fractions: When set to yes, fractional credits will be seen on the credits screen.

UTILITIES

Press the Volume Up or Down Switch to highlight the Utilities option on the Main Menu; then, press the Test Mode Switch to activate.

The Utilities Menu allows the owner/operator to clear the games bookkeeping memory and to install a custom message.

CLEAR CREDITS
CLEAR GAME AUDITS
RESET HIGH SCORES
DEFAULT ADJUSTMENTS
FULL FACTORY RESTORE
EXIT TO MAIN MENU

Utilities Menu

Press the Volume Up or Down Switch to highlight an item from the Utilities Menu; then, press the Test Mode Switch to activate. After an item has been activated, you are given the option of resetting that item or not. For example:

CLEAR CREDITS?	
ARE YOU SURE?	
YES	**NO**

Press the Volume Up or Down Switch to choose YES or NO, then press the Test Mode Switch to lock the choice and return to the Utilities Menu.

To exit the Utilities Menu, press the Volume Up or Down Switch to highlight EXIT TO MAIN MENU; then, press Test Mode Switch to activate selection or press the Service Credit Switch.

CALIBRATE CONTROLS

Press the Volume Up or Down Switch to highlight the Calibrate Controls option on the Main Menu; then, press the Test Mode Switch to activate.

Remove hands and feet from all controls. Set the steering wheel to the center position, then press the Test Mode Switch. Turn the steering wheel to the left-most position, then press the Test Mode Switch. Turn the steering wheel to the right-most position, then press the Test Mode Switch. Push the gas pedal to the maximum position, then press the Test Mode Switch. Push the brake pedal to the maximum position, then press the Test Mode Switch to complete the calibration and return to the Main Menu.

ADJUST VOLUME

Press the Volume Up or Down Switch to highlight the Adjust Volume option on the Main Menu; then, press the Test Mode Switch to activate.

Press the Volume Up Switch to increase, or the Volume Down Switch to decrease the sound level of the game. Press the Test Mode Switch to lock the volume level and return to the Main Menu.

Troubleshooting

PROBLEM	POSSIBLE SOLUTION
NO PICTURE OR DISTORTED PICTURE.	Check for faulty video board or monitor. Check for disconnected video signal cable.
TURN GAME ON & NOTHING HAPPENS.	Check line fuse. Check for +5VDC at pins C, D, 3, and 4 of the JAMMA Connector.
NO SOUND.	Check the speaker and speaker connection to pins L and 10 on the JAMMA Connector. Check volume control setting. Check for +12VDC at pins F and 6 on the JAMMA Connector. Check inter-board wiring on CPU Board. Check sound fuses.
NO GENERAL ILLUMINATION.	Check the 1.0A., F.B. fuse located in the Power Chassis Assembly.
PRESS START BUTTON AND NOTHING HAPPENS.	Check for open wires between the button and CPU Board. Check for contamination on CPU Board pins or the button switch blade contacts. Check for proper ground.
NO CREDIT GIVEN WHEN COINS ARE INSERTED.	Check for contamination on coin switch contacts. Check for an open wire between Coin Switch 1 and pin 16 on the JAMMA Connector or Coin Switch 2 and pin T of the JAMMA Connector.
TOO MANY CREDITS FOR NUMBER OF COINS INSERTED.	Check Game Pricing setting. Check for a Short between pins T & 16 on the JAMMA Connector.
GAME STAYS IN THE TEST MODE.	Check that the Test Switch in the coin door and the Test Switch (Position 1) on DIP Switch 2 are set to Off.

Notes...

CRUIS'N USA

SINGLE SIT DOWN

SECTION
TWO

Parts Information

Cabinet Hardware

Cabinet Assembly	A-17889.1
Lock Retainer Plate	01-7264
Upper Door Lock Cam	01-8989
Leg Leveler Plate	01-9155
Wheel Bracket	01-9359
Wheel Bracket	01-9359
Lock Plate	01-11285
Door Bracket	01-11291
Shaft Caster	02-4404
20" Vent Hole Cover	03-7602
Leg Adjuster, 3.0"	08-7377
Door Cam Lock	20-6542-TB
Caster Wheel	20-9627
Coin Door Assembly	09-74000-33
Coin Vault Enclosure	A-19504
Tamper Proof Screw Tool, T-20	20-9620
#555 Bulb, 6.3v	24-8768
Marquee	31-2005
Marquee Retainer	03-8252-5
Marquee Glass	08-7852
CRT Glass	08-7853
Peddle Assembly	20-10135
Floor Mat	23-6723
Floor Mat, Pedestal	23-6741

Cables

Line Voltage Cable Assembly	A-19248
Transformer Jumper Cable	H-13378
G.I. Jumper Cable	H-15945
Fluorescent Lamp Cable	H-16303
Switcher Power Cable	H-17914
Control Cable	H-18175
Four Speed Shift Cable	H-18737
AC Power Pack Cable	H-19251
Cable Bass Speaker	H-19256
Main Harness Cable	H-19302
Video Signal Cable	H-19357-3

Dash Assembly

Dash Assembly	A-19271

Electronic Rack

Electronic Rack	A-19301
CPU Sound Board Assembly	A-19233-40033
CPU Board Cover	A-19513.2
CPU Board, Mtg. Plate	A-19539
Power Supply Switcher Assy.	A-15202-1
Steering Wheel Driver Assy.	A-18004-40033
Ribbon Cable, 20-pin	5795-10937-06
Ribbon Cable, 20-pin	5795-14465-60

Fluorescent Lamp Assembly

Fluorescent Housing & Bracket	A-15890
Lamp Lock	03-8327
18" Fluorescent Bulb, 15w	24-8809

Manual

Instruction Manual	16-40036-101

Monitor

Monitor, 25"	5675-14041-00
Monitor Bezel	03-9098
Monitor Cover Assembly	A-19288
Monitor Support Bracket	A-19501

Seat Assembly

Pedestal w/Seat Assembly	A-19304

Speakers

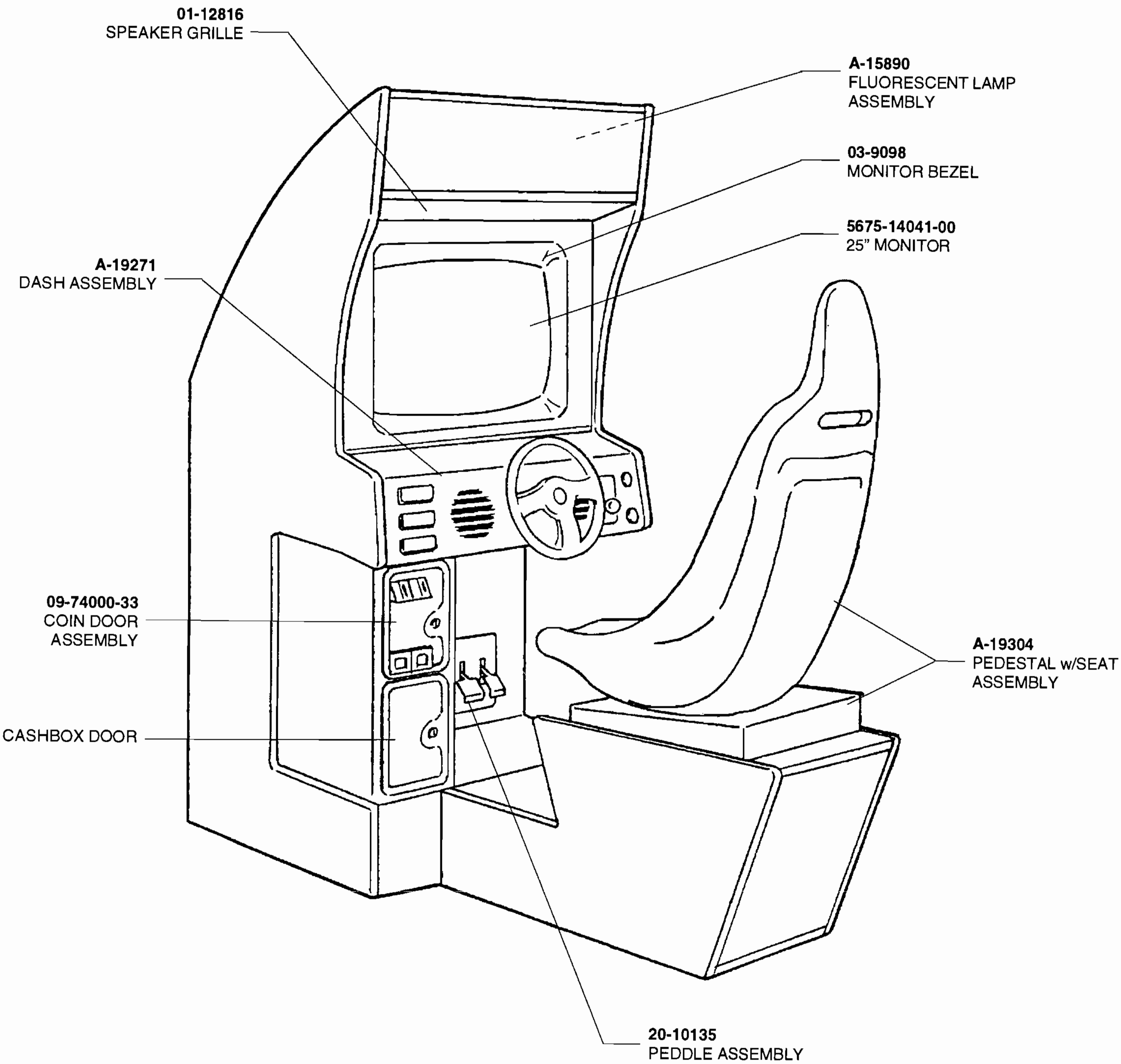
Speaker, 4Ω, Tweeter, 15w	5555-12924-00
Speaker, 4Ω, 6", 25w	5555-12929-00
Speaker, 4Ω, 5-1/4", 25w	5555-12856-00
Speaker Grille	01-12816

Transformer Assembly

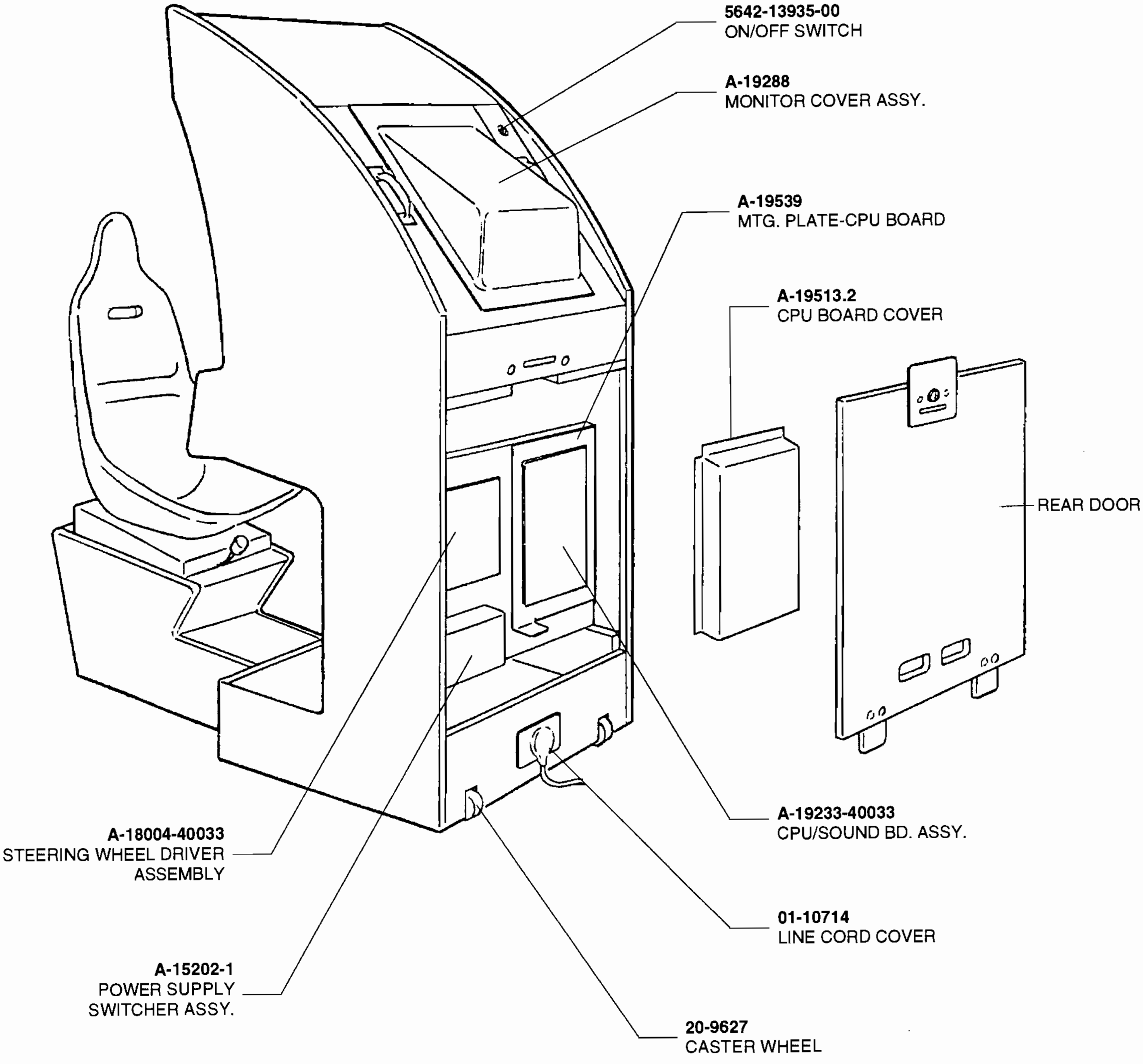
Power Pack Assembly	A-19244
AC Power Pack Chassis Assy.	A-19245
Transformer Jumper Cable	H-13378
G.I. Jumper Cable	H-15945
Cable, AC Power Pack IEC	H-19251
Line Filter, 5Amp	5102-13864-00
Power Transformer	5610-13965-00
Fuse, SB, 1A, 250v	5731-06569-00
Fuse Holder, Panel	5733-12869-00

Cabinet Assembly

(Front View)



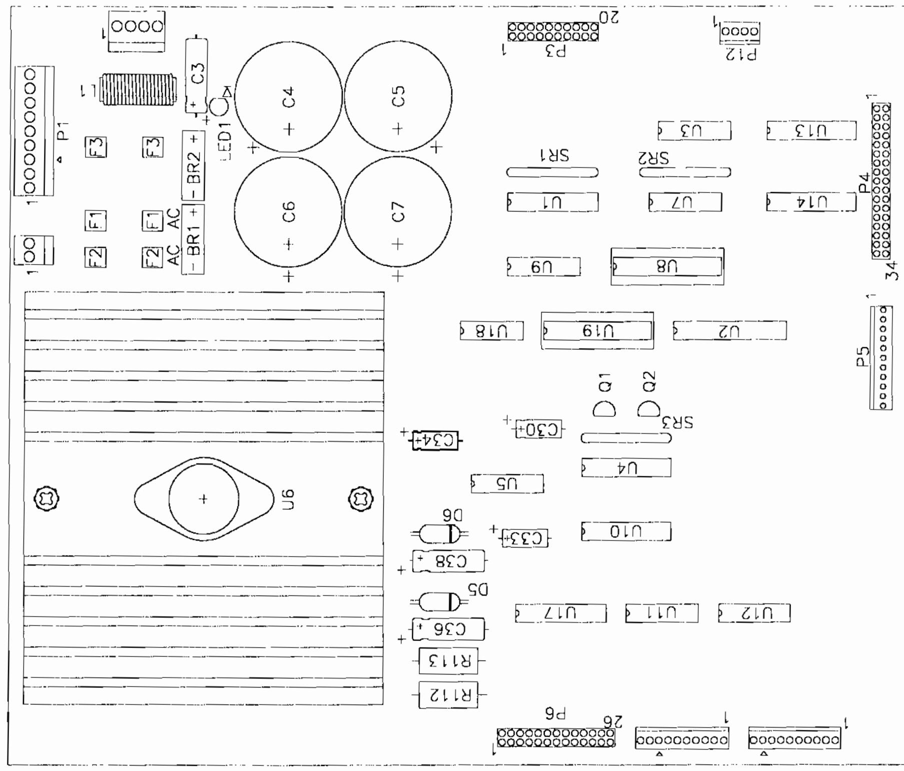
Cabinet Assembly
(Rear View)



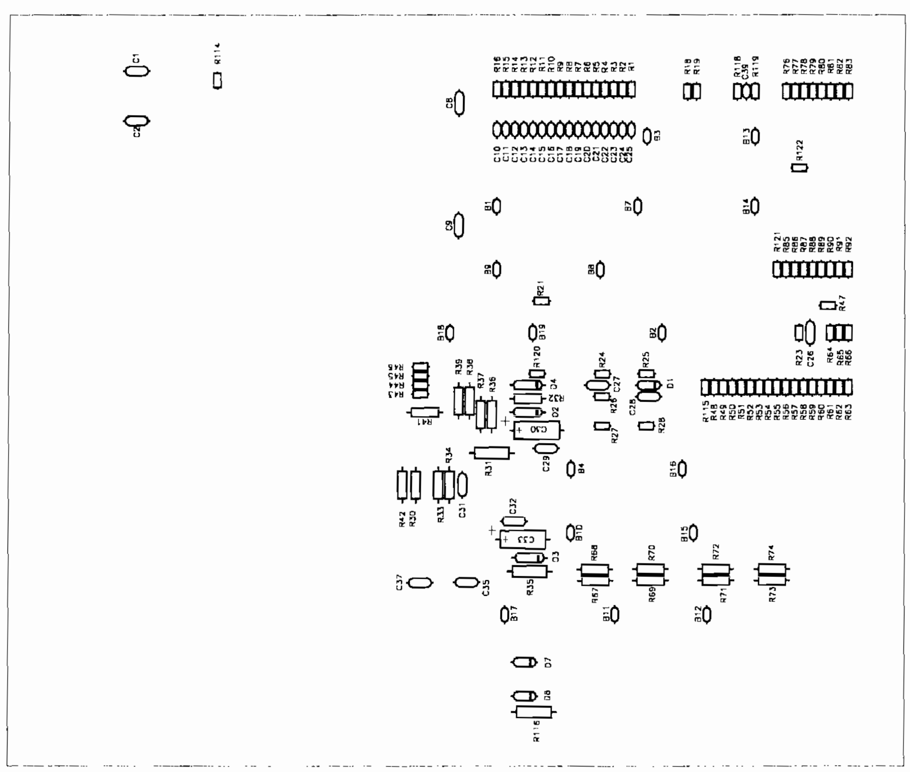
A-18004-40033
Wheel Driver Board Assembly

Part Number	Designator	Description
A-18005.1		Wheel Driver Board Assembly
5340-12958-00	U3	I.C. 26LS31
5340-12959-00	U7	I.C. 26LS32
5311-12538-00	U18	I.C. 74HC14
5311-14067-00	U17	I.C. 74HC245
5311-14068-00	U4, U10	I.C. 74HC574
5311-10948-00	U9	I.C. 74HC138
5430-13598-00	U1	I.C. 75160B
5372-13323-00	U2	I.C. ADC0848
5371-14070-00	U5	I.C. DAC08, D-A Converter
5370-12602-00	U11, U12	I.C. ULN2064B
5700-12047-00	U8, U19	Solder Socket , 24-pin, 3"
5370-14069-00	U6	I.C. LM12, Power OP-AMP
5160-10269-00	Q2	Trans. 2N3904
5100-13945-02	BR1, BR2	Bridge, 4.0A.
5040-08986-00	C3	Cap., Electrolytic, 100μF, 10v
5040-12298-00	C36, C38	Cap., Electrolytic, 100μF, 40v
5040-13417-00	C4-C7	Cap., Electrolytic, 10,000μF
5791-10862-09	P1	Connector, 9-pin Header .156
5791-10862-02	P10	Connector, 2-pin Header .156
5791-10862-04	P2	Connector, 4-pin Header .156
5791-12461-04	P12	Connector, 4-pin Header .100
5791-09437-00	P3	Connector, 20-pin Rib. Header
5791-12461-11	P5	Connector, 11-pin Header .100
5791-10850-00	P6	Connector, 26-pin Rib. Header
5791-12461-10	P7, P8	Connector, 10-pin Header .100
5733-14113-00	F1-F3	Fuse Holder, 5x20mm
5070-09045-00	D5, D6	Diode, MR501
5551-09822-00	L1	Inductor, 4.7μH
5671-13732-00	LED1	LED, Red
5010-10428-00	R112, R113	Resistor, 470Ω, 1w, 5%
5019-09362-00	SR1-SR3	Resistor, 4.7KΩ SIP
5705-14076-00	-	Heatsink, 4 Lead TO-3
5701-14092-00	-	Thermal Pad For Power AMP
4006-01003-08	-	Mach. Screw, 6-32 x 1/2"
4008-01003-08	-	Mach. Screw, 8-32 x 1/2"
4406-01128-00	-	Nut, 6-32 KEPS
4408-01128-00	-	Nut, 8-32 KEPS
03-9129	-	Nylon Spacer
5162-08976-00	Q1	Transistor, 2N6427
5791-10862-03	P11	Connector, 3-pin Header
A-18005.1-AI		Wheel Driver Assy., Auto-Insert
5010-14093-00	R23, R47, R116	Resistor, 0Ω, 1/8w, 5%
5010-13844-00	R43, R44, R48, R49, R52, R53, R56, R57, R60, R61	Resistor, 100KΩ, 1/8w, 5%
5010-13593-00	R30, R33, R34, R36-R39, R46, R51, R55 R59, R63-R66, R115	Resistor, 10KΩ, 1/8w, 5%
5010-09134-00	R42	Resistor, 150KΩ, 1/4w, 5%
5010-13594-00	R26	Resistor, 1KΩ, 1/8w, 5%
5010-08931-00	R31, R35	Resistor, 1KΩ, 1/2w, 5%
5010-13372-00	R19	Resistor, 220Ω, 1/8w, 5%
5010-09999-00	R67-R74	Resistor, 2KΩ, 1/4w, 5%
5010-13596-00	R45, R50, R54, R58, R62	Resistor, 33KΩ, 1/8w, 5%
5010-13364-00	R1-R16,	Resistor, 33Ω, 1/8w, 5%
5010-13371-00	R114	Resistor, 330Ω, 1/8w, 5%
5010-13365-00	R21, R24, R27, R119	Resistor, 4.7KΩ, 1/8w, 5%
5010-14065-00	R41	Resistor, 75KΩ, 1/8w, 5%
5010-13366-00	R18, R28, R32, R118	Resistor, 470Ω, 1/8w, 5%
5043-08980-00	B1-B4, B7-B9, B10-B12, B17-B19, C8, C9, C31	Capacitor, 01μF,50v(+80,-20%)
5043-08996-00	C26, C27, C29, C32, C35-C37	Capacitor, .1μF, 50v,(±20%)Ax.
5048-12577-00	C28	Capacitor, .47μF, 50v, Axial
5048-13375-00	C10-C25	Capacitor, 100PF, 50v,10% Ax.
5048-11031-00	C1, C2, C39	Capacitor, .001μF,50v,10% Ax.
5040-09343-00	C30, C33	Cap. Electrolytic , 10μF, 20v
5070-08919-00	D1	Diode, 1N4148
5075-09135-00	D4	Zener Diode, 10v, 1N4740A
5075-12824-00	D7, D8	Zener Diode, 12v, 1N4742A
5075-14066-00	D2, D3	Zener Diode, 15v, 1N4744A
A-19674	U8	Plfd. Assy. Wheel Driver
A-19675	U19	Plfd. Assy. Wheel Driver
5731-14094-00	F1, F2	Fuse, SB, 4A, 5 x 20mm
5731-14468-00	F3	Fuse, SB, 3A, 5 x 22mm

A-18004-40033
Wheel Driver Board Assembly



A-18005.1 Wheel Driver Board Assembly



A-18005.1-AI Wheel Driver Assembly, Auto -Insert

A-19233-40033
CPU/Sound Board Assembly

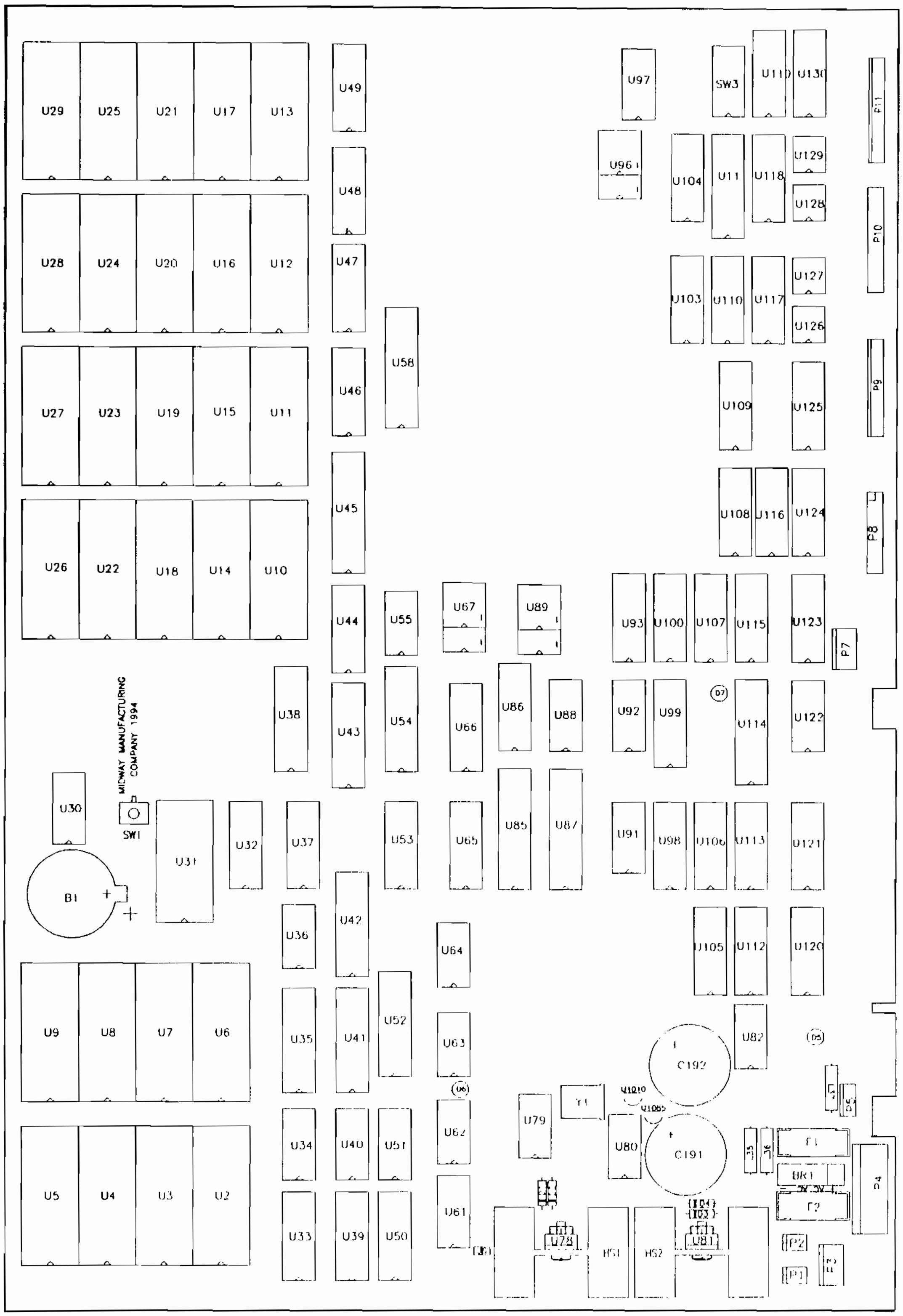
Part Number	Designator	Description
5880-11056-00	B1	Battery-Litium 3V
5731-14468-00	F1,F2	Fuse SB 3A 5x20mm
A-19668	U52	Assy. Plfd. Crusin CPU
A-19669	U38	Assy. Plfd. Crusin CPU
A-19670	U43	Assy. Plfd. Crusin CPU
A-16971	U54	Assy. Plfd. Crusin CPU
A-19672	U114	Assy. Plfd. Crusin CPU
A-19673	U111	Assy. Plfd. Crusin CPU
A-5343-40033-2, -29	U2-U29	E-PROM Assembly
A-19234	-	**CPU Sub-Assembly**
5040-13417-00	C191, C192	Capelectro, 10,000MF, 35v
5370-12602-00	U122	ULN2064-Quad High Current Darlington Switch
5070-09054-00	D1-D4	Diode, 1N4004
5370-13419-00	U78, U81	TDA2030
5370-12730-00	U79, U80	TL084
5340-13304-00	U35, U41, U42	2K x 8 SRAM
5340-13597-00	U85, U87	62256, 32Kx8 BIT SRAM, 55nS
5340-12558-00	U31	8Kx8 CMOS SRAM, 120nS
5371-13299-00	U61	AS1851
5372-12901-00	U130	ADC0844-8 BIT A TO D Converter w/4 CH. Multiplexer
5340-12958-00	U92	AM26LS31 - Quad Differential Line Drivers
5340-12959-00	U91	AM26LS32 - Quad Differential Line Receivers
5344-14130-00	U45, U58	IDT7204, CMOS Parallel FIFO 4K x 9 BIT, 20nS
5434-12255-00	U30	Max691, Power ON Reset/ WATCHDO/CMOS CTL Circuit
5283-10551-00	U62	74F00
5286-14178-00	U55	74AS02 - ALS TTL Quad 2 Input NOR GATE
5280-09309-00	U82	7407-TTL Hex Buffer w/ High Voltage Output
5311-12538-00	U63	74HC14
5281-09500-00	U36	74LS32
5281-09487-00	U64	74LS74
5311-10948-00	U34	74HC138
5317-12023-00	U88	74ALS138-ALS TTL 3/8 Decoder
5311-12043-00	U40, U51	74HC174
5430-14290-00	U126-U129	74176B-Bidirectional Transceiver
5317-12208-00	U44, U46, U48, U49, U98, U107, U108, U113	74ALS245, ALS TTL Octal Bus Transceiver
5311-12287-00	U33, U39, U50, U93, U104, U105, U109, U112, U116, U119, U120, U121, U125	74HC541 - HC TTL Octal Buffer
5317-12211-00	U32, U47, U65, U66, U86, U110	74ALS541 - ALS TTL Octal Buffer
5317-12212-00	U37, U53, U99, U100, U103, U106, U115, U118, U123	74ALS574 - ALS TTL Octal Flip-Flop
5430-13598-00	U117, U124	75160 - Octal Interface Bus Trans.
5250-13303-00	U1085	LM79L05T
5250-13302-00	U1010	LM78L05T
5521-13806-06	U67	Xtal Oscillator, 33mHz
5521-13806-05	U89	Xtal Oscillator, 40mHz
5521-13603-01	U96	Xtal Oscillator, 50mHz
5520-13301-00	Y1	Y10H 10mHz
5671-13732-00	D5-D7	Light Emitting Diode, Red
5556-14181-00	L35-L37	FB700
5100-13945-02	BR1	Bridge 4A
5733-14113-00	F1, F2	Fuse Holder
5700-12047-00	U38, U43, U52, U54, U111, U114	I.C. Socket, 24-pin , .3"
5700-12088-00	U2-U29	I.C. Socket, 32-pin, .6"
5881-12315-00	B1	Battery Holder
5645-09025-00	U97, SW3	DIP Switch, 16-Pin
5641-12551-00	SW1	Switch PCB Mount MC
5791-10862-02	P1, P2	Connector, C156x2 2-pin
5791-12461-04	P5	Connector, C100x5 5-pin
5791-12461-05	P3, P7	Connector, C100x5 5-pin
5791-10862-07	P4	Connector, C156x7 7-pin
5791-12461-12	P9	Connector, C100x12 12-pin
5791-12461-13	P11	Connector, C100x13 13-pin
5791-09437-00	P8	Connector, 20-pin Ribbon, .1"
5791-10850-00	P10	Connector, 26-pin Ribbon , .1"
5705-12638-00	HS1, HS2	Heatsink 5299B
5791-12994-00	J6	Header
4004-01005-06	-	Mach. Screw, 4-40 x 3/8"
4404-01124-00	-	Nut 4-40 KEPS
A-19331		**CPU Surface Mount**
5052-14149-00	C173, C174	Cap., 0805 22PF, 10%, 50v
5052-14366-00	C88, C118, C159, C160, C164, C197, C198, C212, C224-C226, C229-C234, C255, C274, C275, C277, C279, C278, C299-C303	Cap., 0805, 47PF, 10%, 50v
5052-14169-00	C115, C151-C153, C155-C157, C235, C237-C239, C241, C242, C256-C273, C280-C297	Cap., 0805, 100PF, 10%,50V
5052-14367-00	C123, C190	Cap., 0805PF, 5%, 50v
5052-14167-00	C169	Cap., 0805, 470PF, 20%, 50v
5052-14171-00	C95, C98, C111, C128	Cap., 0805, 680PF, 5%, 50v
5052-14166-00	C94, C96, C99, C110, C127, C228, C252	Cap., 0805, 1000PF, 5%, 50v
5052-14168-00	C97, C100, C129	Cap., 0805, 3900PF, 5%, 50v
5052-14350-00	C109	Cap., 0805, 4700PF, 5%, 50v
5052-14164-00	C1-C8, C10, C11, C13- C16, C18, C19, C21-C31, C33-C41, C43-C48, C52, C54, C55, C57-C64, C66, C67, C69, C70, C72-C75, C77-C80, C83, C85, C87, C90, C101, C102, C104, C105, C107, C116, C117, C120, C131, C132, C135-C138, C140, C142-C144, C150, C162, C163, C166, C175, C178-C187, C193-C196, C199-C209, C213-C218, C221-C223, C236, C244-C251, C305, C306	Cap., 0805, 0.01MF, 10%,50v
5052-14435-00	C56, C71, C84, C89, C103, C119, C165, C219	Cap., 0805 10PF, 5%, 50v
5052-14385-00	C148	Cap.,0805 0.022MF,10%,50v
5052-14369-00	C145-C147	Cap.,0805 0.047MF,10%, 50v
5052-14165-00	C20, C51, C53, C65, C81, C82, C91, C93, C106, C112-C114, C121, C124, C125, C130, C133, C139, C141, C149, C167, C170, C176, C210, C211, C254	Cap.,0805 0.1MF, 20%, 50v
5051-14150-00	C108, C168	B5328 0.22 MF TANT ±10%, 50v
5052-13633-00	C1109, C1130, C1032	Cap.,1206,0.33MF, ±20%, 50v
5051-14371-00	C126, C171, C172, C189	Cap., 1MF,± 20%, 35v TANT

A-19233-40033
CPU/Sound Board Assembly
(Continued)

Part Number	Designator	Description
5051-14151-000	C9, C12, C17, C32, C42, C68, C86, C92, C134, C154, C158, C161, C177, C220, C227, C20, C243, C253, C276, C278, C304	Cap., 10MF, ±20%, 16vTANT
5051-14148-00	C122, C188	Cap., 22MF, ±20%, 16v
5020-14349-00	R2, R3, R6, R7, R9, R11, R16, R18, R19, R21, R23,R24, R97, R192, R193, R238, R251, R372, R761	Resistor, 0Ω, 1/10w
5020-14372-00	R337, R553	Resistor, 15Ω, 1/10w, 5%
5020-14373-00	R12-R14, R35-R42, R60, R61, R63, R64, R66-R76, R89, R90, R92, R93, R96, R98, R99-R104, R107, R110, R111, R112, R114-R122, R124-R147, R149, R153-R155, R157-R159, R161-R163, R166-R168, R172-R175, R180-R188, R191, R195, R197-R200, R205, R206, R208, R209, R211, R212, R222, R223, R225, R226, R228, R229, R231-R233, R235, R239, R241-R243, R245, R247, R250, R254-R258, R260, R264-R273, R276, R277, R279, R282, R284, R295-R299, R301, R304, R306-R310, R312, R314-R333, R335, R357, R359-R368, R370, R373-R375, R380-R414, R425, R426, R428-R432, R434, R435, R437- R467, R472, R484-R487, R491, R493, R494, R497, R499, R501, R508-R524, R527, R528, R532, R537-R552, R567-R586, R632, R637, R688, R691, R694, R696, R697, R699, R700, R702, R703, R705, R726-R732, R734, R736, R738, R740, R742, R744, R746, R748, R751, R753, R754, R756, R759, R762, R764, R533	Res., 0805 33Ω,1/10w, 5%
5020-14161-00	R26, R28, R30, R32, R34, R43-R49, R78-R87, R148, R215, R218, R219, R342, R344-R356, R358, R369, R420, R422, R423, R482, R483, R554, R556	Res., 0805 47 Ω, 1/10w, 5%
5020-14152-00	R25, R77, R123, R150, R178, R217, R341, R427, R436, R601, R609, R647	Res., 0805 100 Ω, 1/10w, 5%
5020-14374-00	R737, R739, R743, R749	Res., 0805 120 Ω, 1/10w, 5%
5020-14375-00	R488	Res., 0805, 220 Ω, 1/10w, 5%
5020-14160-00	R343, R610, R650	Res., 0805 330 Ω, 1/10w, 5%
5020-14376-00	R489, R628, R630, R634, R635, R639, R641, R651, R654, R656, R658, R659, R662, R663, R666, R667, R670, R673, R674, R677, R678, R680, R681, R685, R686, R709, R710, R712, R713, R715, R716, R718, R720	Res., 0805 470 Ω, 1/10w, 5%
5020-14377-00	R504, R560, R565	Res., 0805 487 Ω, 1/10w, 1%
5020-14378-00	R473, R595	Res., 0805 680 Ω, 1/10w, 5%
5020-14379-00	R475, R505, R561, R566, R619, R623, R626	Res., 0805 1K Ω, 1/10w, 1%
5020-14380-00	R506, R557, R562,	Res., 0805 2K Ω, 1/10w, 1%

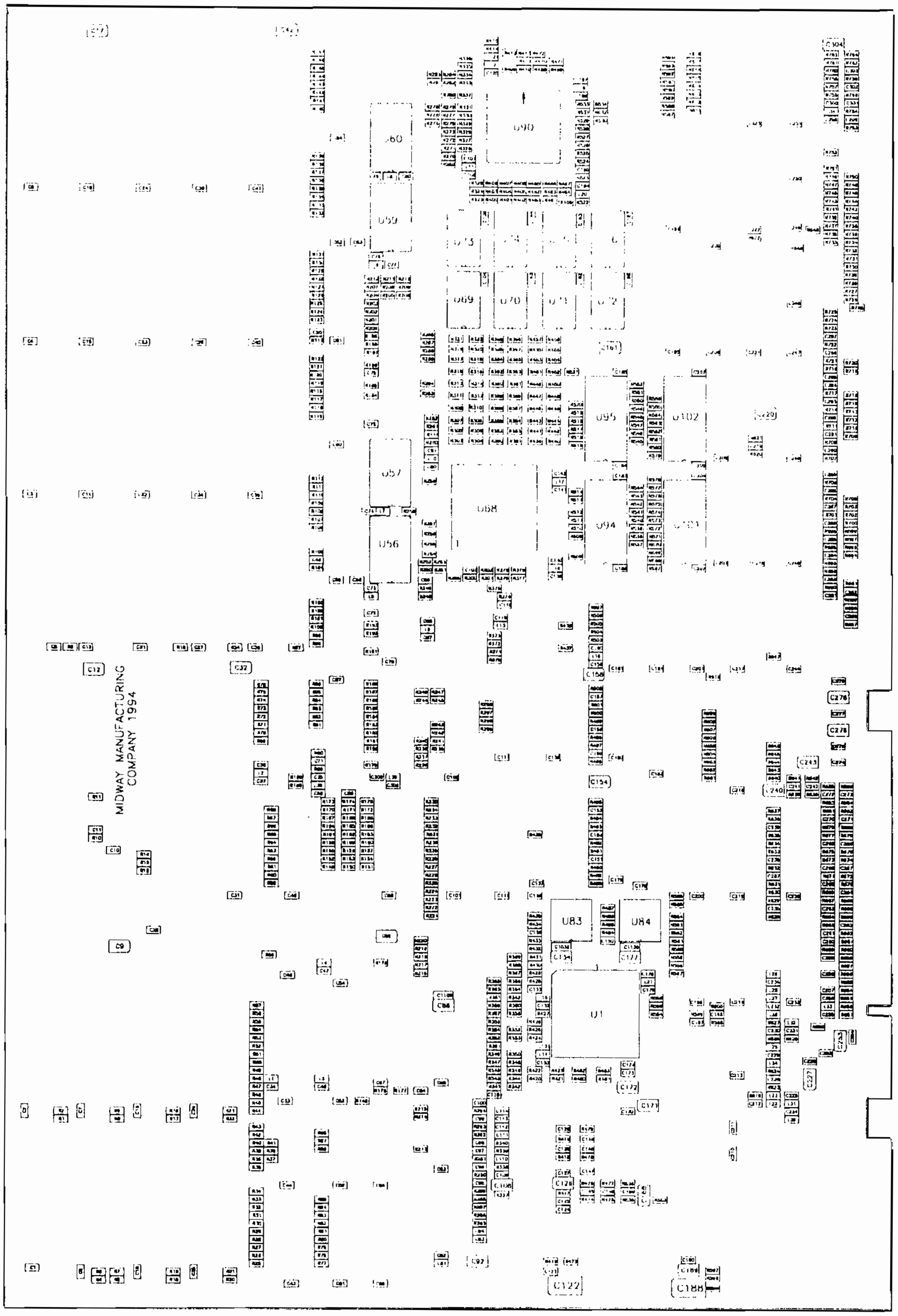
Part Number	Designator	Description
5020-14380-00	R602-R605, R607, R608, R640, R643	
5020-14345-00	R285, R287	Res., 0805 3.32KΩ, 1/10w, 1%
5020-14155-00	R507, R558, R563	Res., 0805 4.7K Ω, 1/10w, 5%
5020-14172-00	R10, R27, R29, R31, R33, R50-R59, R62, R65, R88, R91, R94, R95, R106, R108, R109, R151, R152, R156, R160, R164, R165, R169, R170, R176, R179, R194, R201-R204, R207, R210, R213,	Res., 0805 4.7K Ω, 1/10w, 5%
5020-14172-00	R214, R216, R220, R221, R224, R227, R230, R234, R252, R259, R261-R263, R274, R275, R278, R280, R281, R283, R300, R302, R303, R305, R311, R313, R334, R336, R376, R377-R379, R415, R421, R468, R469, R471, R480,	Res., 0805 4.7KΩ, 1/10w, 5%
5020-14172-00	R481, R490, R492, R495, R496, R498, R500, R502, R525, R526, R529-R531, R534, R555, R587-R594, R606, R611-R618, R622, R629, R631, R633, R636, R638, R642, R644-R646, R652, R653, R655, R657, R660, R661, R664, R665, R668, R669, R671, R672, R675, R676, R679, R682-R684, R687, R689, R690, R692, R693,	Res., 0805 4.7KΩ, 1/10w, 5%
5020-14172-00	R695, R698, R701, R704, R706-R708, R711, R714, R717, R719, R721, R722, R755, R757, R758, R760, R470	Res., 0805 4.7KΩ, 1/10w, 5%
5020-14173-00	R288, R289, R290-R294, R338-R340, R419	Res., 0805 6.19KΩ,1/10w, 1%
5020-14158-00	R477, R478, R559, R564, R625	Res., 0805 8.2KΩ, 1/10w, 5%
5020-14383-00	R476	Res., 0805 9.09KΩ, 1/10w, 1%
5020-14156-00	R648, R649, R723-R725, R733, R735, R741, R745, R747, R750, R752	Res., 0805 10KΩ, 1/10w, 5%
5020-14384-00	R474	Res., 0805 11KΩ, 1/10w, 1%
5020-14381-00	R416, R417, R479, R535, R596, R597	Res., 0805 22KΩ, 1/10w, 5%
5020-14174-00	R418, R536	Res., 0805 47KΩ, 1/10w, 5%
5349-14131-00	U94, U95, U101, U102	256K x 8 BIT VRAM, 70nS
5349-13599-00	U69-U76	44C1000, 1Megx4BIT CMOSDynamic RAM, 60nS
5349-14132-00	U56, U57, U59, U60	6226X, 128Kx8BIT Fast Static RAM 20nS
5400-13298-00	U1	ADSP2105
5410-13465-00	U68	IC, VR1 ASIC
5285-14342-00	U83, U84	74ALS374 20PSOL
5400-14129-00	U90	DSP TMS320C31, 50MHZ
5556-14348-00	L1-L34, L38, L39, R765	Inductor, FB0805
5020-14347-00	R286, R424, R433	Res., 0805, 4.75KΩ,1/10w,1%

A-19233-40033
CPU/Sound Board Assembly



A-19234 CPU Sub-Assembly

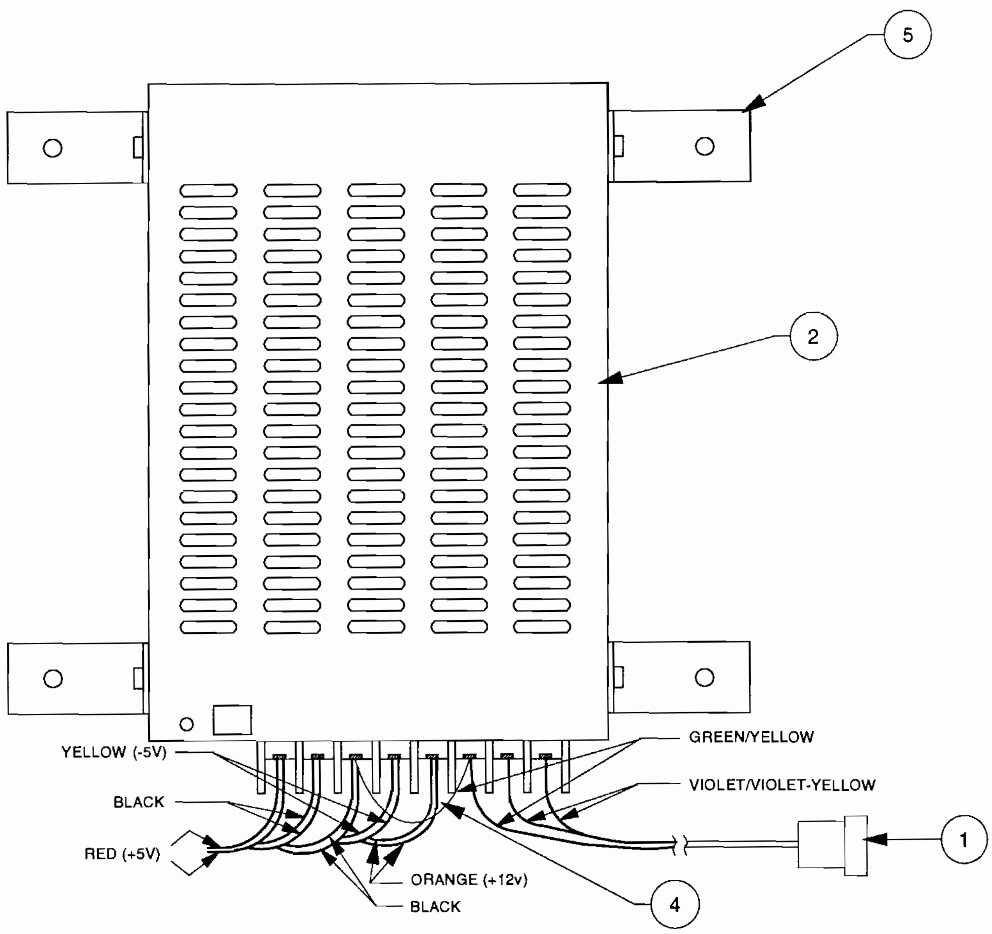
A-19233-40033
CPU/Sound Board Assembly

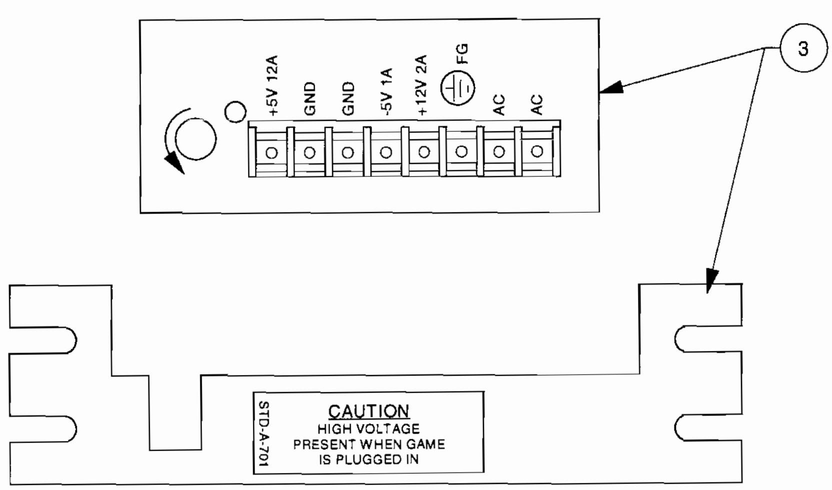


A-19331 CPU Surface Mount Sub-Assembly

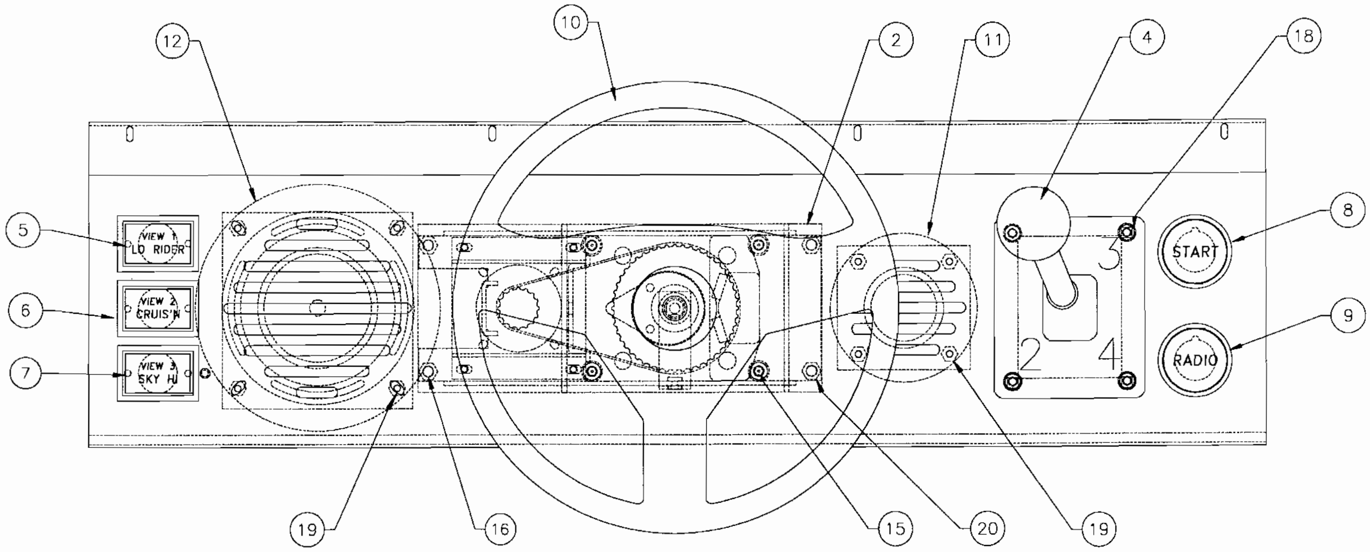
A-15202-1
Power Supply Switcher Assembly

Item	Part Number	Description
1	H-17914	Switch Power Cable
2	20-9920	Power Supply Switcher/UL
3	01-12162	Shield for Switcher
4	H-15206	Ground Jumper
5	01-10500	Power Supply Mounting Bracket





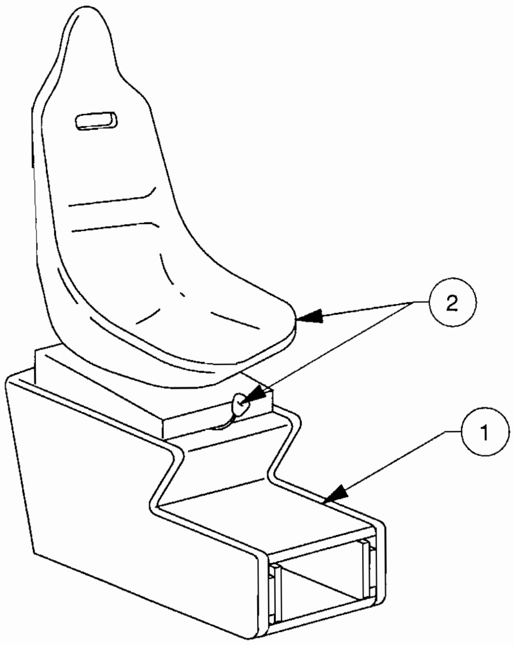
A-19271
Dash Assembly



Item	Part Number	Description
1	A-19502	Dash Plate
2	A-19503	Steering Mech. Mtg. Plate
3	03-7655-8	Clamp Cable, 1/2"
4	20-10117	4-Speed Shifter
5	20-10127-1	Switch P/B Rectangular, Red
6	20-10127-2	Switch P/B Rectangular, White
7	20-10127-3	Switch P/B Rectangular, Blue
8	20-10129-1	Switch P/B Circular Med, Start
9	20-10129-2	Switch P/B Circular Med, Radio
10	20-10134	Steering Mechanism

Item	Part Number	Description
11	5555-12924-00	Speaker, 4Ω, Tweeter 15w
12	5555-12856-00	Speaker, 4Ω, 25w, 5-1/4"
13	H-18175	Control Cable
14	H-18737	Four Speed Shift Cable
15	4020-01100-20	TR, 1/4-20 x 1-1/4"
16	4420-01119-00	Nut, 1/4-20 ESN/NE
17	4310-01123-10B	Bolt, 10-24 x 5/8 CB
18	4410-01128-00	Nut, 10-24 KEPS
19	4408-01128-00	Nut, 8-32 KEPS
20	4320-01124-12	Bolt, 1/4-20 x 3/4"

A-19034
Pedestal w/Seat Assembly



Item	Part Number	Description
1	A-19305	Pedestal Base Assembly (see below)
2	A-19306	Seat w/Slide Assembly
	20-10224	Seat Plate (top)
	20-10225	Seat Slide Assembly (bottom)
3	01-13551	Bottom Edge, Pedestal
4	4020-01100-20	Tr, ¼ 20 x 1-¼"
5	4108-01042-12	Sh. Metal Screw, #8 x ¾"
6	4700-00032-00B	Flat Washer, ¼"

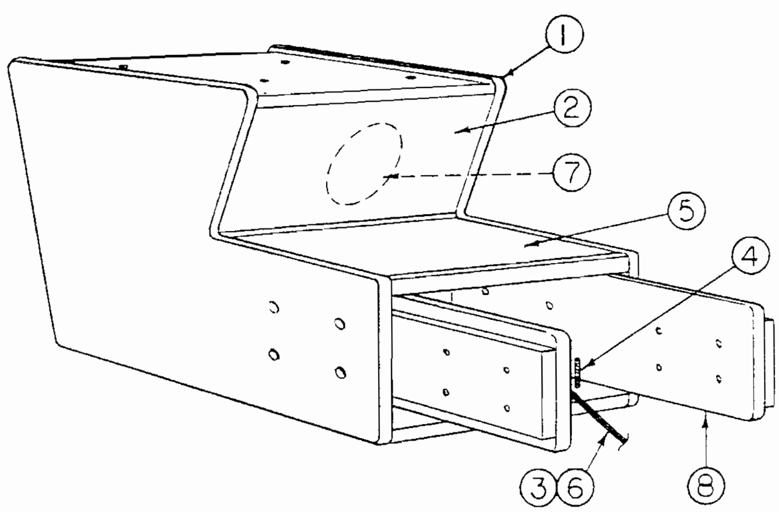
Seat to Seat Plate (top) Mounting Hardware:

Part Number	Description
4324-01124-08	Bolt 5/16-18 x ½ Hex Head
4700-00091-00	Flat Washer.343 x .875 x .059

Seat Plate (top) Side Mounting Hardware:

Part Number	Description
4020-01100-08	Tamper Resistant ¼-20 x ½ BH
4702-00014-00B	Lock Washer ¼-20 Internal Tooth-Black
4700-00072-00	Flat Washer.256 x .500 x .032

A-19305
Pedestal Base Assembly



Item	Part Number	Description
1	A-19348	Pedestal Cabinet Assembly
2	01-12816	Speaker Grill
3	03-7655-4	Cable Clamp 1/4" (3)
4	08-7377	Leg Level Adjuster 3" (4)
5	23-6741	Floor Mat 13-7/8 x 14-3/8"
6	H-19256	Bass Speaker Cable
7	5555-12929-00	Speaker, 4Ω, 6", 25w

Hardware

Part Number	Description
4608-01081-11	H-F #8 x 11/16 PL-HWH (3)
4308-01123-20B	Bolt 8-32 x 1-1/4" CB
4408-01128-00	Nut 8-32 KEPS
4506-01106-24B	SSS 6-32 x 1-1/2" (4)
4406-01128-00	Nut 6-32 KEPS (4)
4108-01092-10B	Txt #8 x 5/8 PH (8)

Related Parts

8	A-19303	Pedestal Support Beam (2)

A-19305
Pedestal Base Assembly (Continued)

Pedestal Base to Support Beam Mounting Hardware:

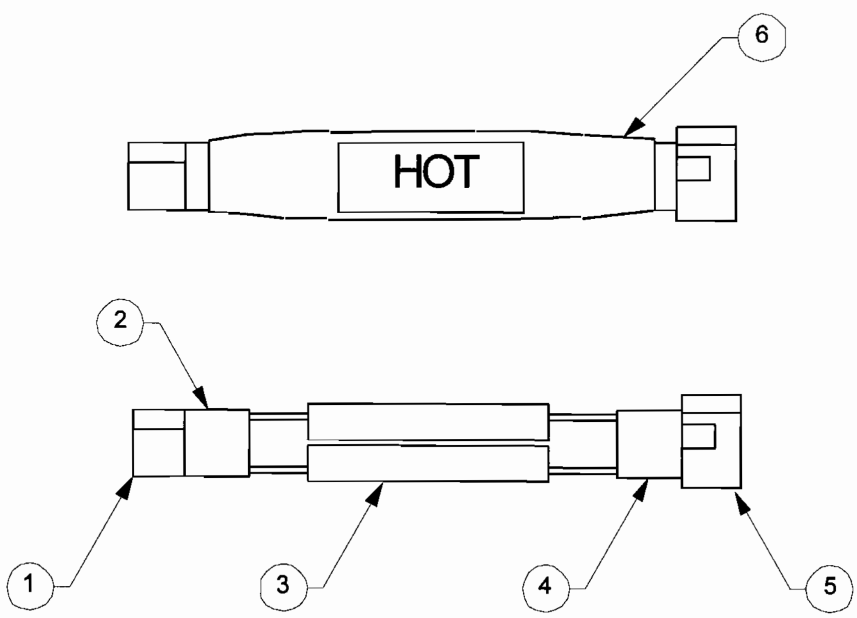
4020-01100-40	Tamper Resistant ¼-20 x 2 ½" Bolt
4700-00032-00B	Flat Washer .265 x 3625 x .067
4702-00014-00B	Lock Washer ¼-20 Internal Tooth-Black

Video Cabinet to Support Beam Mounting Hardware:

4320-01124-40	Bolt ¼-20 x 2 ½" Hex Head
4700-00032-00B	Flat Washer .265 x 3625 x .067
4702-00014-00B	Lock Washer ¼-20 Internal Tooth-Black

A-19807
Wheel Limit Resistor Assembly

Item	Part Number	Description
1	5821-13238-00	Female Reel Pin 18-22G
2	5792-12561-00	Female Connector
3	5012-13138-00	Resistor, 1W, 10w
4	5791-12570-00	Male Connector
5	5820-13237-00	Male Reel Pin 18-22G
6	RM-23-07	Heat Shrink Tubing 1"



Notes...

CRUIS'N USA

SINGLE SIT DOWN

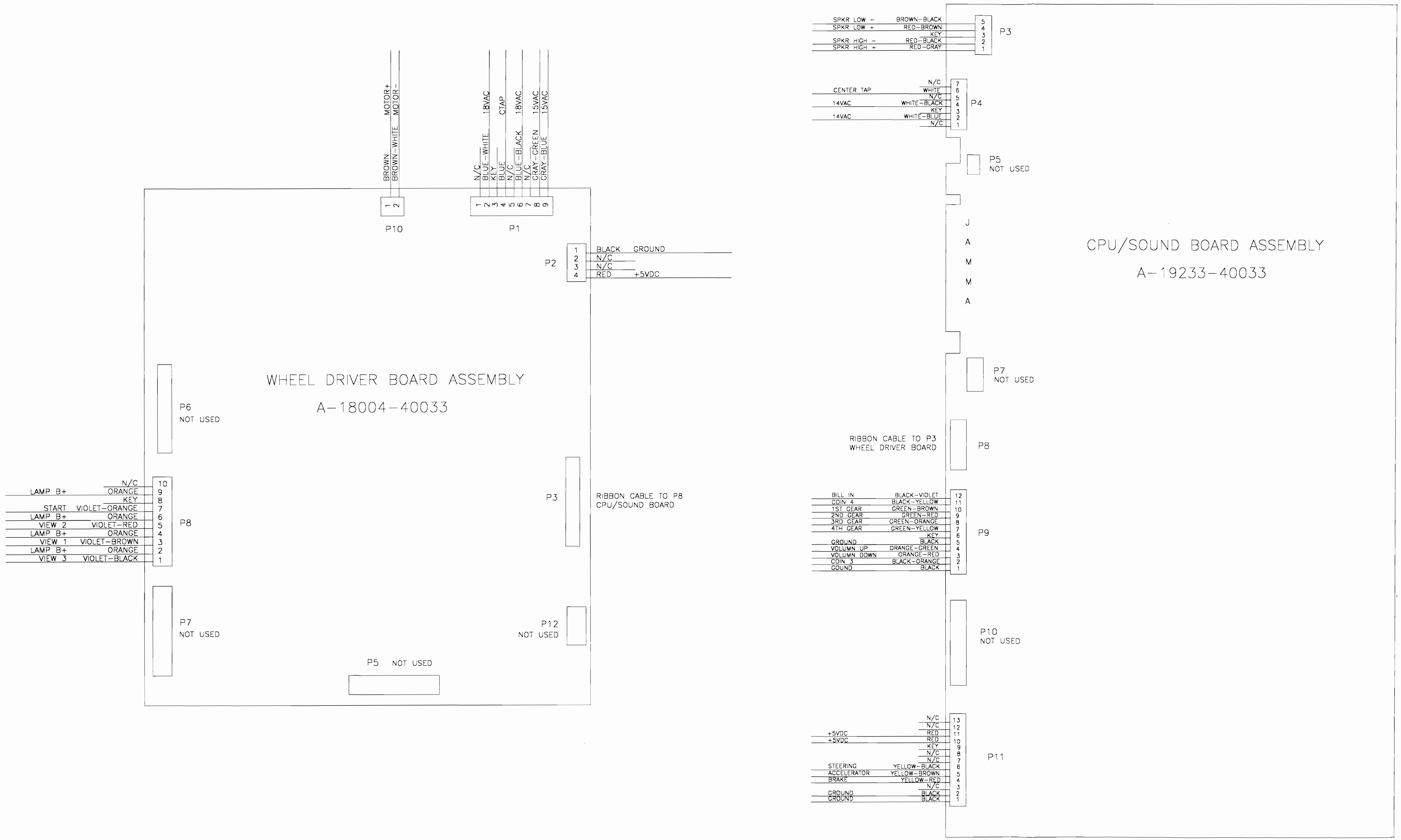
SECTION
THREE

Schematics and Wiring Diagrams

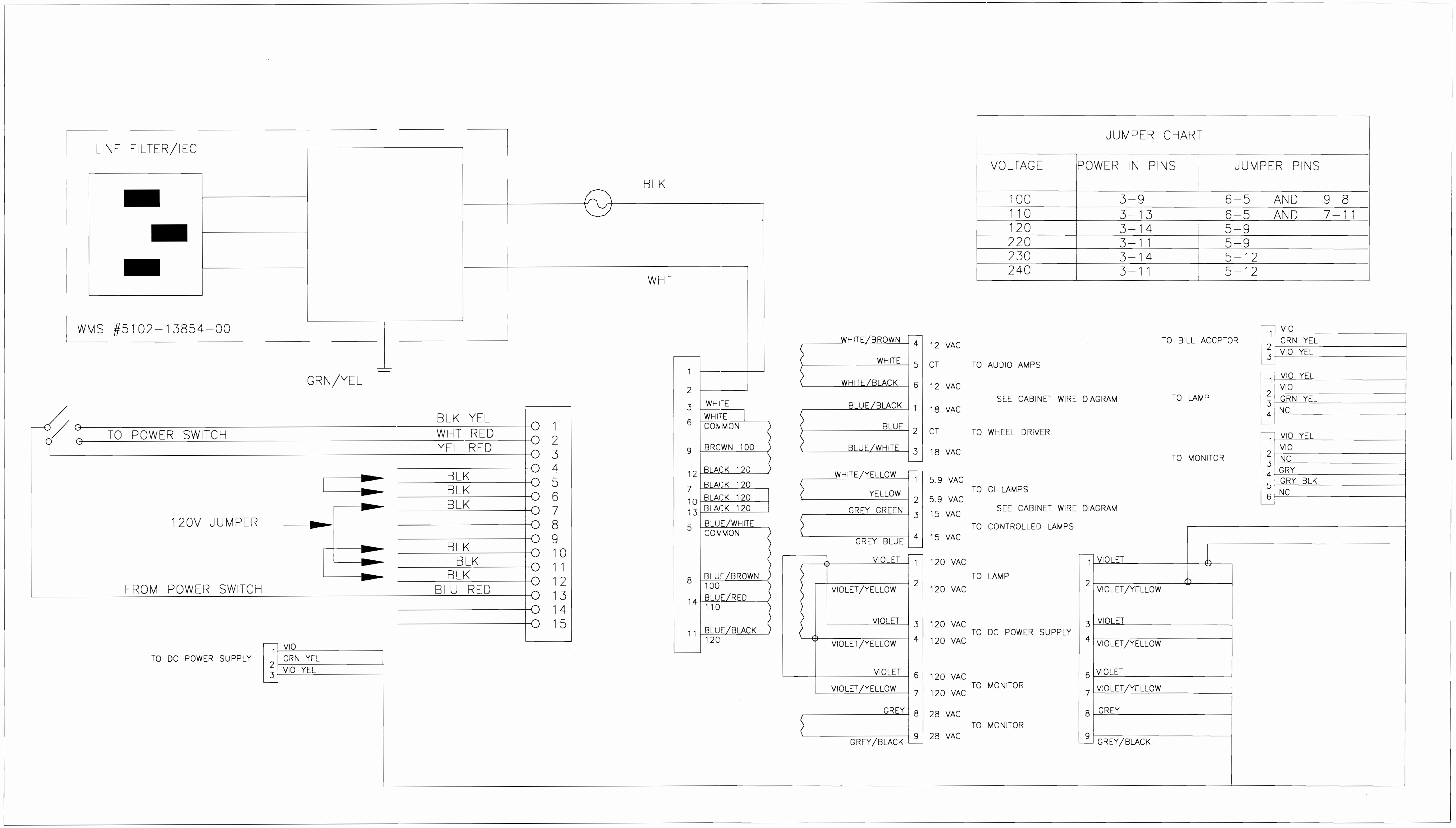
JAMMA CHART

FUNCTION	*WIRE COLOR*	*PIN*	*PIN*	*WIRE COLOR*	*FUNCTION*
Ground	Black	1	A	Black	Ground
Ground	Black	2	B	Black	Ground
+5VDC	Red	3	C	Red	+5VDC
+5VDC	Red	4	D	Red	+5VDC
-5VDC	Yellow	5	E	Yellow	-5VDC
+12VDC	Orange	6	F	Orange	+12VDC
	Key	7	H	Key	
Coin Counter 1	Brown	8	J	Brown-Red	Coin Counter 2
	N/C	9	K	N/C	
	N/C	10	L	N/C	
	N/C	11	M	N/C	
Video Red	Red	12	N	Green	Video Green
Video Blue	Brown	13	P	White	Video Sync
Video Ground	Shield	14	R	White-Gray	Service
Test	Black-Blue	15	S	Black-Green	Slam
Coin 1	Black-Brown	16	T	Black-Red	Coin 2
Start	White	17	U	N/C	
Not Used	White-Black	18	V	N/C	
Radio	White-Brown	19	W	N/C	
Not Used	White-Red	20	X	N/C	
	N/C	21	Y	N/C	
View 1	White-Yellow	22	Z	N/C	
View 2	White-Green	23	a	N/C	
View 3	White-Blue	24	b	N/C	
Not Used	White-Violet	25	c	N/C	
	N/C	26	d	N/C	
	N/C	27	e	Black	Ground
Ground	Black	28	f	Black	Ground

INTERBOARD WIRING DIAGRAM



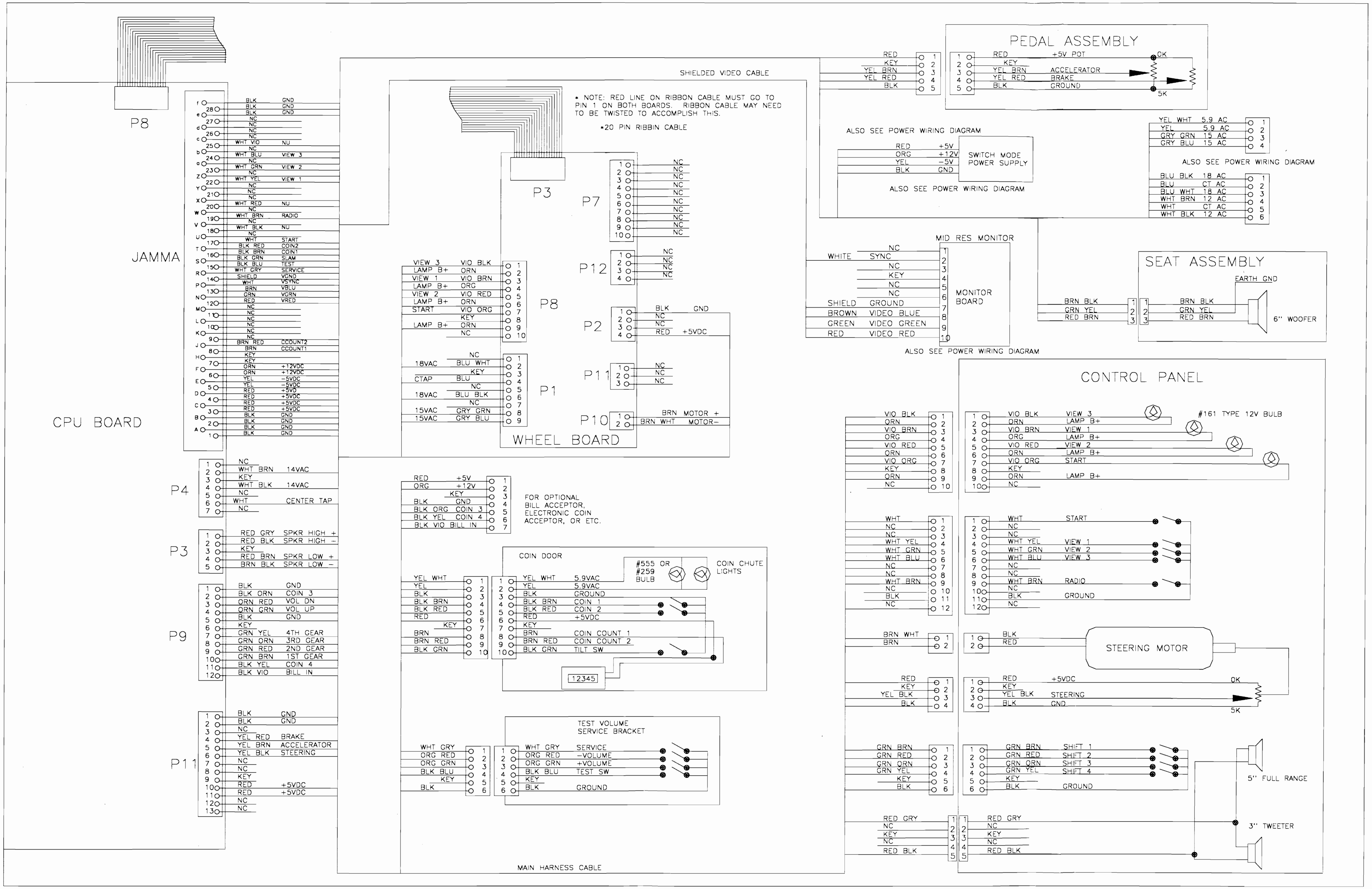
POWER WIRING DIAGRAM

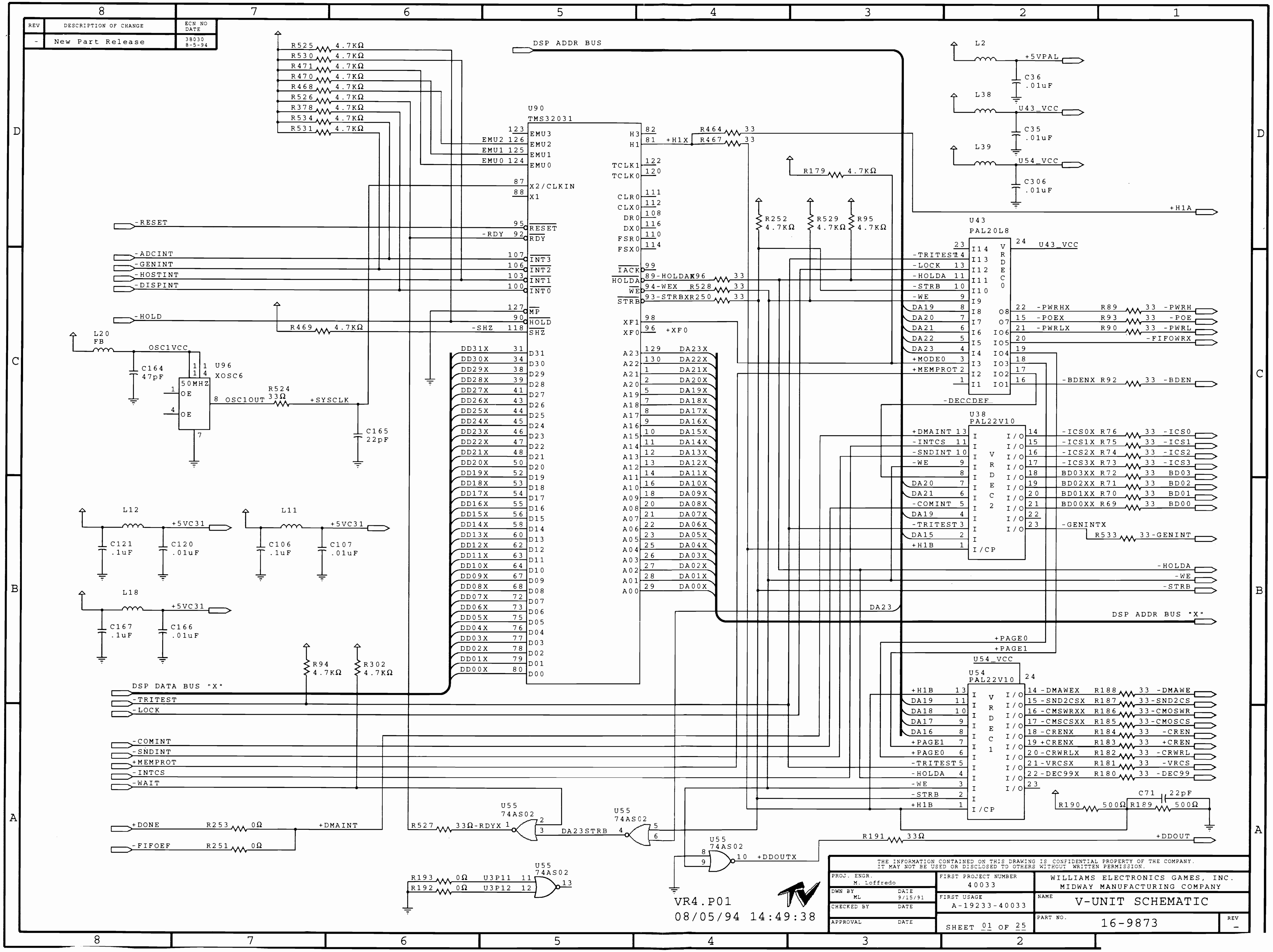


JUMPER CHART

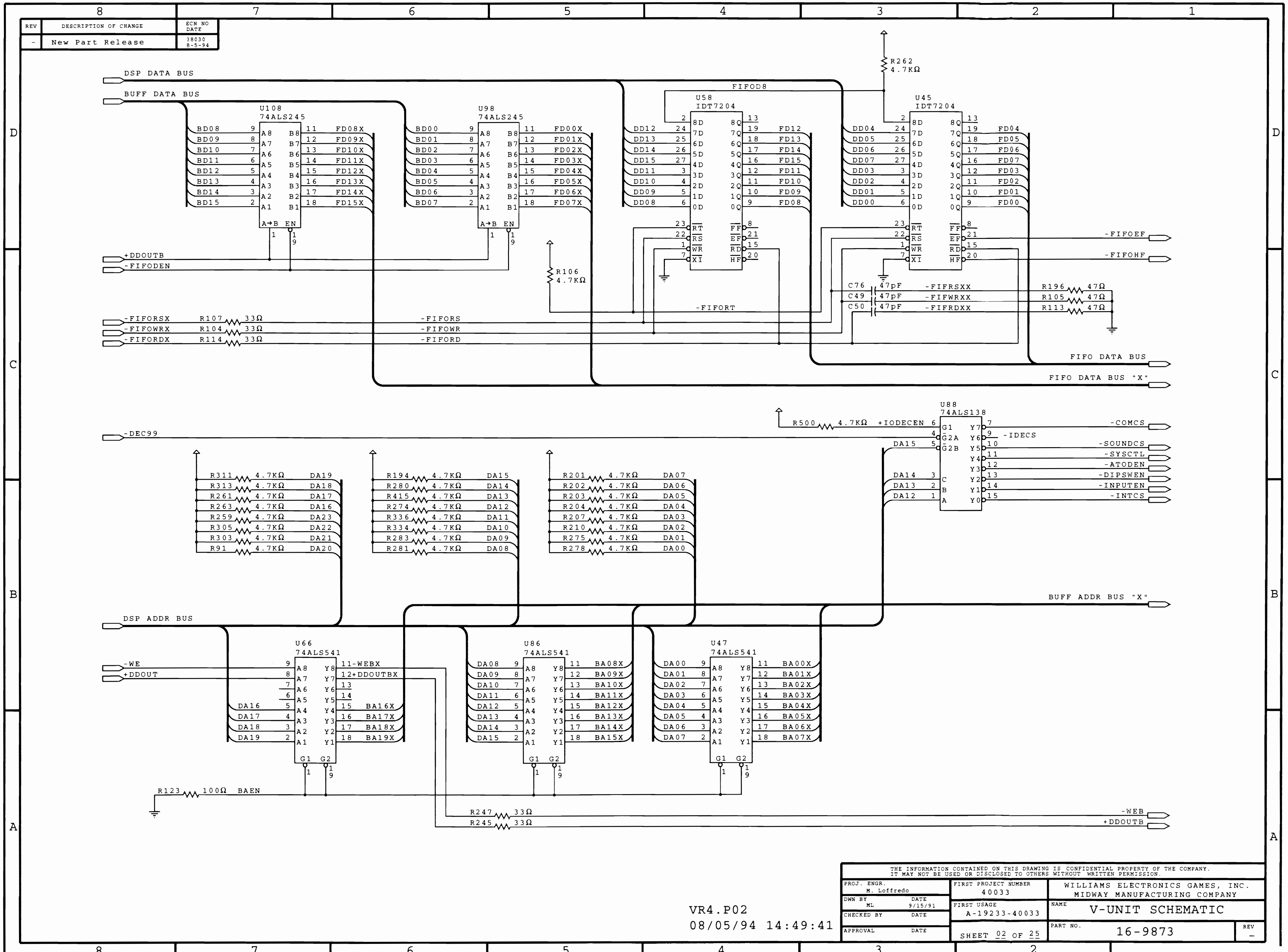
VOLTAGE	POWER IN PINS	JUMPER PINS
100	3-9	6-5 AND 9-8
110	3-13	6-5 AND 7-11
120	3-14	5-9
220	3-11	5-9
230	3-14	5-12
240	3-11	5-12

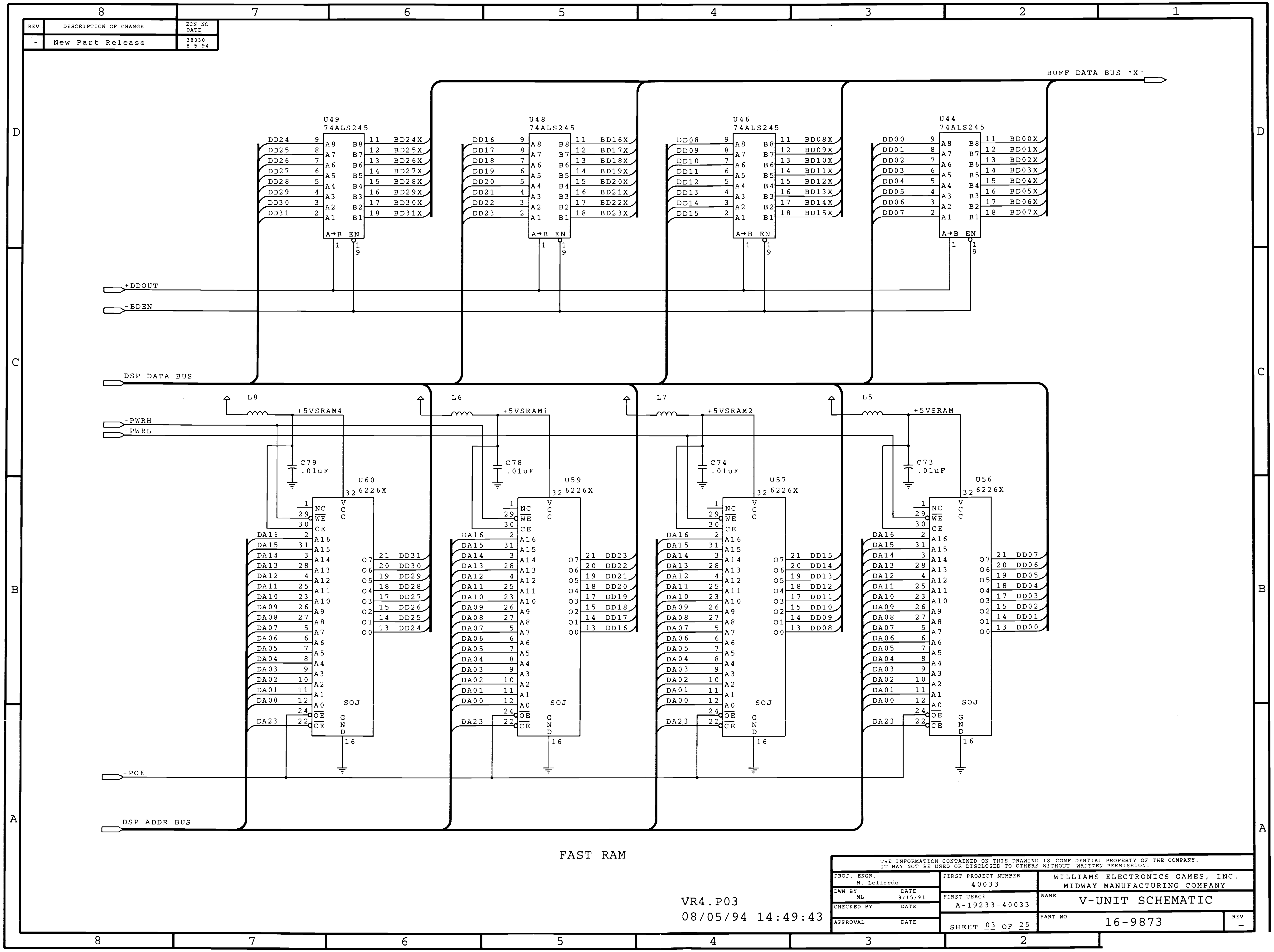
CABINET WIRING DIAGRAM





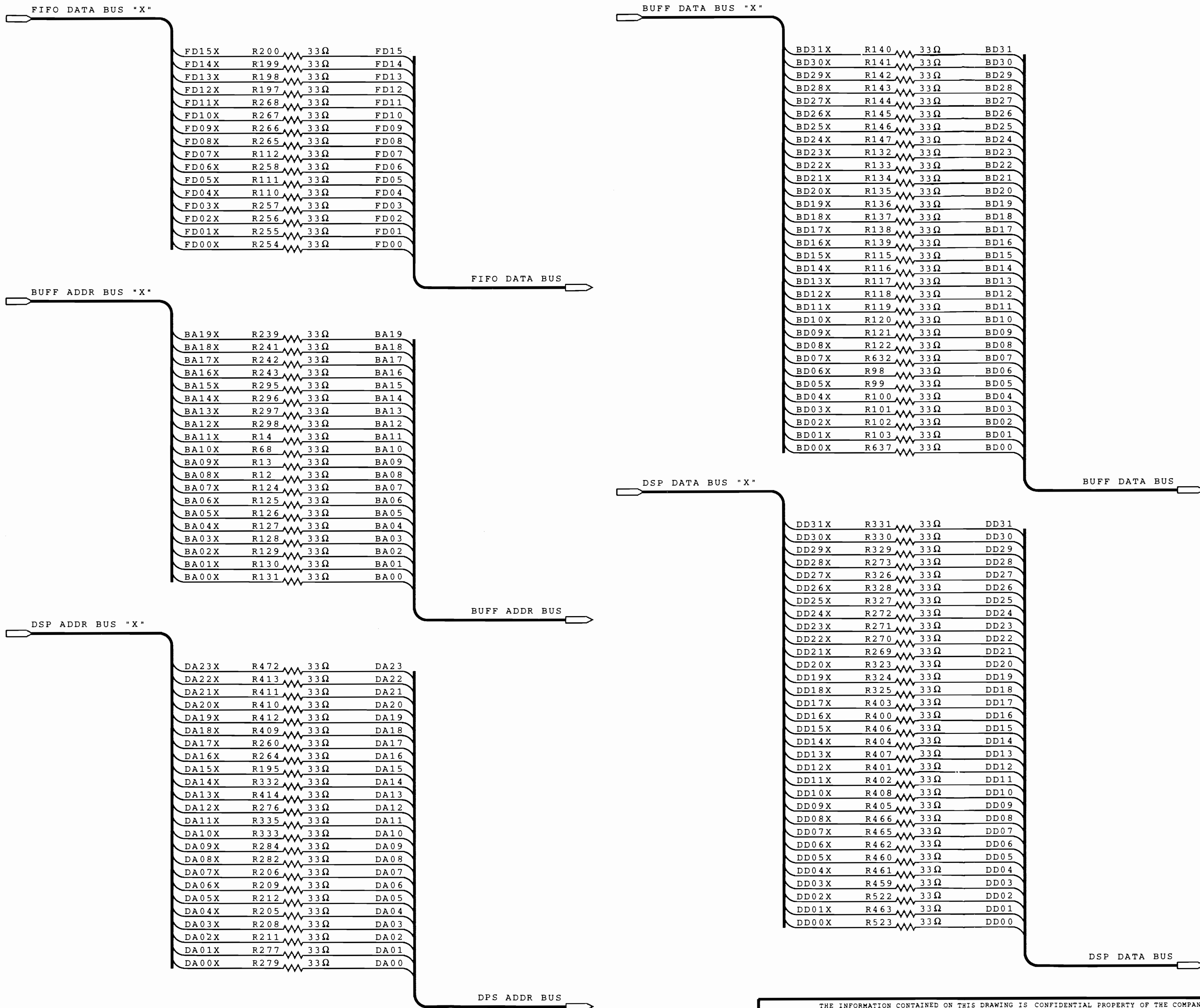
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ECN NO DATE
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New Part Release
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EMU2
EMU1
EMU0
X2/CLKIN
X1
RESET
RDY
INT3
INT2
INT1
INT0
MP
HOLD
SHZ
H3
H1
TCLK1
TCLK0
CLR0
CLX0
DR0
DX0
FSR0
FSX0
IACK
HOLDA
WE
STRB
XF1
XF0
+H1X
+H1A
+XF0
-RESET
-RDY
-ADCINT
-GENINT
-HOSTINT
-DISPINT
-HOLD
-SHZ
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FB
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R524
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C165
22pF
L12
+5VC31
C121
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C106
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R94
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R302
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-LOCK
-COMINT
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-INTCS
-WAIT
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R251
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U55
74AS02
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R191
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+DDOUT
R193
R192
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U3P12
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L38
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C35
.01uF
L39
U54_VCC
C306
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U43
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-LOCK
-HOLDA
-STRB
-WE
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+MEMPROT
-PWRHX
-POEX
-PWRLX
-PWRH
-POE
-PWRL
-FIFOWRX
-BDENX
R92
-BDEN
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-SNDINT
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-STRB
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-CRWRLX
-VRCSX
-DEC99X
-DMAWE
-SND2CS
-CMOSWR
-CMOSCS
-CREN
+CREN
-CRWRL
-VRCS
-DEC99
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08/05/94 14:49:38
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.
PROJ. ENGR. M. Loffredo
FIRST PROJECT NUMBER 40033
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
DWN BY ML
DATE 9/15/91
FIRST USAGE A-19233-40033
NAME
V-UNIT SCHEMATIC
CHECKED BY
DATE
APPROVAL
DATE
SHEET 01 OF 25
PART NO. 16-9873
REV -


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BUFF DATA BUS
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U98 74ALS245
BD00 BD01 BD02 BD03 BD04 BD05 BD06 BD07
FD00X FD01X FD02X FD03X FD04X FD05X FD06X FD07X
FIFOD8
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FD12 FD13 FD14 FD15 FD11 FD10 FD09 FD08
U45 IDT7204
DD04 DD05 DD06 DD07 DD03 DD02 DD01 DD00
FD04 FD05 FD06 FD07 FD03 FD02 FD01 FD00
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R106 4.7KΩ
+DDOUTB
-FIFODEN
-FIFOEF
-FIFOHF
C76 47pF -FIFRSXX R196 47Ω
C49 47pF -FIFWRXX R105 47Ω
C50 47pF -FIFRDXX R113 47Ω
-FIFORT
-FIFORSX R107 33Ω -FIFORS
-FIFOWRX R104 33Ω -FIFOWR
-FIFORDX R114 33Ω -FIFORD
FIFO DATA BUS
FIFO DATA BUS "X"
U88 74ALS138
R500 4.7KΩ +IODECEN
-DEC99
-IDECS
DA15 DA14 DA13 DA12
-COMCS
-SOUNDCS
-SYSCTL
-ATODEN
-DIPSWEN
-INPUTEN
-INTCS
R311 R313 R261 R263 R259 R305 R303 R91 4.7KΩ
DA19 DA18 DA17 DA16 DA23 DA22 DA21 DA20
R194 R280 R415 R274 R336 R334 R283 R281 4.7KΩ
DA15 DA14 DA13 DA12 DA11 DA10 DA09 DA08
R201 R202 R203 R204 R207 R210 R275 R278 4.7KΩ
DA07 DA06 DA05 DA04 DA03 DA02 DA01 DA00
BUFF ADDR BUS "X"
DSP ADDR BUS
U66 74ALS541
-WE
+DDOUT
11-WEBX
12+DDOUTBX
DA16 DA17 DA18 DA19
BA16X BA17X BA18X BA19X
U86 74ALS541
DA08 DA09 DA10 DA11 DA12 DA13 DA14 DA15
BA08X BA09X BA10X BA11X BA12X BA13X BA14X BA15X
U47 74ALS541
DA00 DA01 DA02 DA03 DA04 DA05 DA06 DA07
BA00X BA01X BA02X BA03X BA04X BA05X BA06X BA07X
R123 100Ω BAEN
R247 33Ω -WEB
R245 33Ω +DDOUTB
VR4.P02
08/05/94 14:49:41
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PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 02 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -



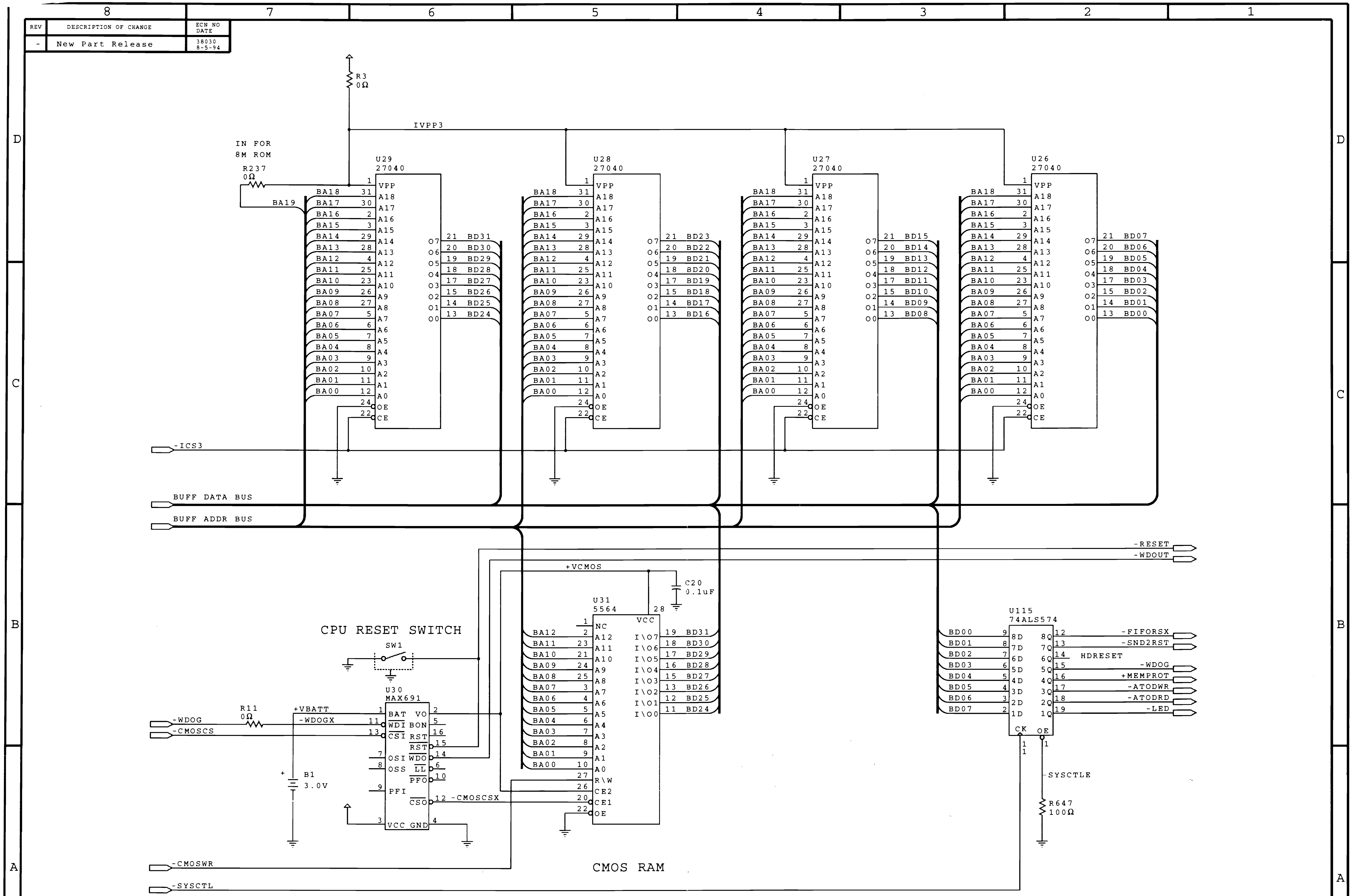
REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | New Part Release | 38030 8-5-94
BUFF DATA BUS "X"
U49 74ALS245
U48 74ALS245
U46 74ALS245
U44 74ALS245
DD24 DD25 DD26 DD27 DD28 DD29 DD30 DD31
BD24X BD25X BD26X BD27X BD28X BD29X BD30X BD31X
DD16 DD17 DD18 DD19 DD20 DD21 DD22 DD23
BD16X BD17X BD18X BD19X BD20X BD21X BD22X BD23X
DD08 DD09 DD10 DD11 DD12 DD13 DD14 DD15
BD08X BD09X BD10X BD11X BD12X BD13X BD14X BD15X
DD00 DD01 DD02 DD03 DD04 DD05 DD06 DD07
BD00X BD01X BD02X BD03X BD04X BD05X BD06X BD07X
A→B EN
+DDOUT
-BDEN
DSP DATA BUS
L8 +5VSRAM4
L6 +5VSRAM1
L7 +5VSRAM2
L5 +5VSRAM
-PWRH
-PWRL
C79 .01uF
C78 .01uF
C74 .01uF
C73 .01uF
U60 6226X
U59 6226X
U57 6226X
U56 6226X
NC WE CE VCC GND OE CE SOJ
DA16 DA15 DA14 DA13 DA12 DA11 DA10 DA09 DA08 DA07 DA06 DA05 DA04 DA03 DA02 DA01 DA00 DA23
-POE
DSP ADDR BUS
FAST RAM
VR4.P03
08/05/94 14:49:43
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PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 03 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	New Part Release	38030 8-5-94



VR4.P04
08/05/94 14:49:43

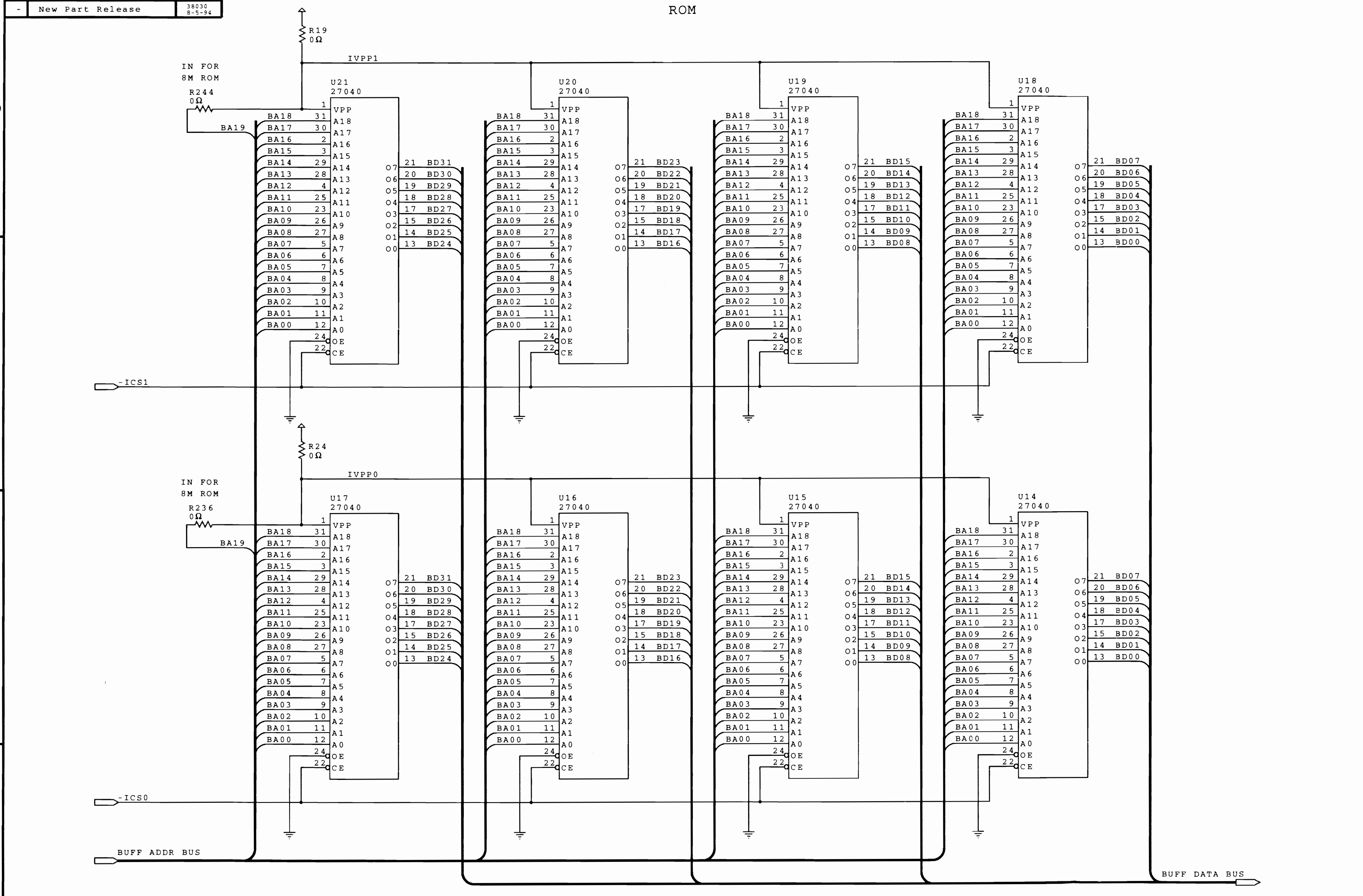
PROJ. ENGR. M. Loffredo	FIRST PROJECT NUMBER 40033	WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY	
DWN BY ML DATE 9/15/91	FIRST USAGE A-19233-40033	NAME V-UNIT SCHEMATIC	
CHECKED BY DATE			
APPROVAL DATE	SHEET 04 OF 25	PART NO. 16-9873	REV -



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PROJ. ENGR. M. Loffredo	FIRST PROJECT NUMBER 40033	WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY
DWN BY ML / DATE 9/15/91	FIRST USAGE A-19233-40033	NAME V-UNIT SCHEMATIC
CHECKED BY / DATE		PART NO. 16-9873 / REV -
APPROVAL / DATE	SHEET 05 OF 25	

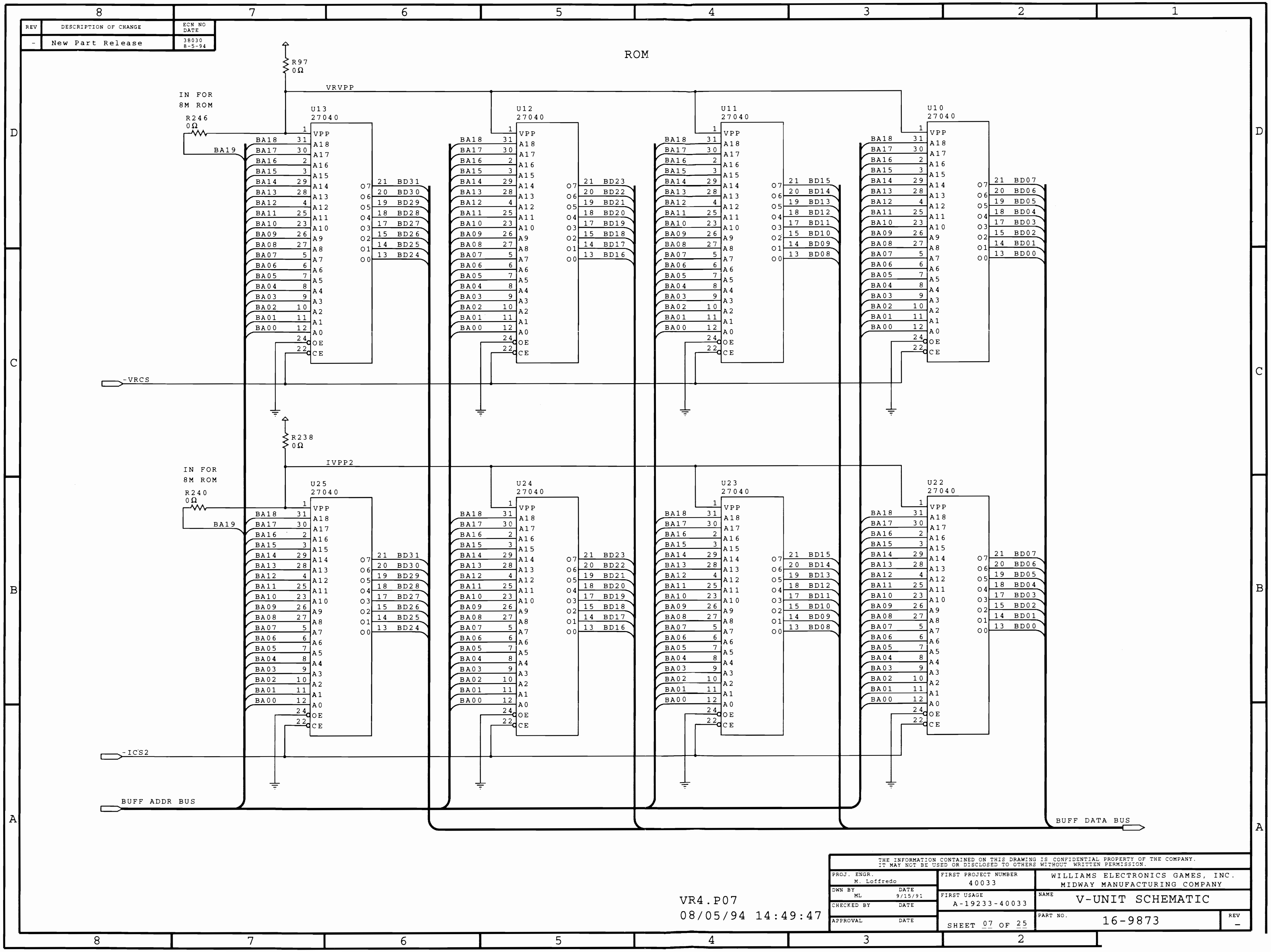
REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	New Part Release	38030 8-5-94



VR4.P06
08/05/94 14:49:46

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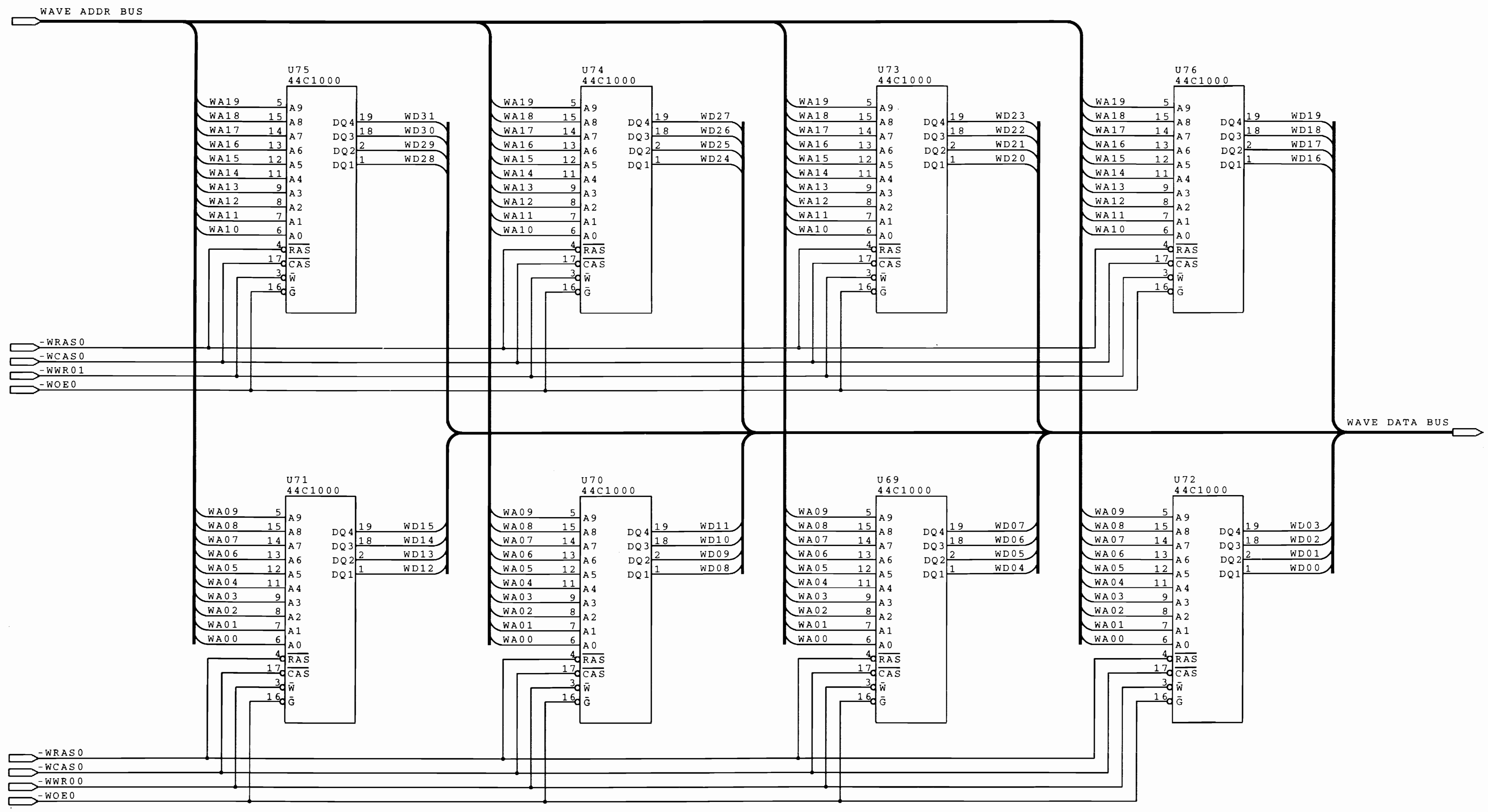
PROJ. ENGR. M. Loffredo	FIRST PROJECT NUMBER 40033	WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY	
DWN BY ML DATE 9/15/91	FIRST USAGE A-19233-40033	NAME V-UNIT SCHEMATIC	
CHECKED BY DATE			
APPROVAL DATE	SHEET 06 OF 25	PART NO. 16-9873	REV -



REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030 8-5-94
ROM
R97 0Ω
VRVPP
IN FOR 8M ROM
R246 0Ω
BA19
U13 27040
U12 27040
U11 27040
U10 27040
-VRCS
R238 0Ω
IVPP2
IN FOR 8M ROM
R240 0Ω
U25 27040
U24 27040
U23 27040
U22 27040
-ICS2
BUFF ADDR BUS
BUFF DATA BUS
VR4.P07
08/05/94 14:49:47
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PROJ. ENGR. M. Loffredo
DWN BY ML
DATE 9/15/91
CHECKED BY
DATE
APPROVAL
DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 07 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	New Part Release	38030 8-5-94

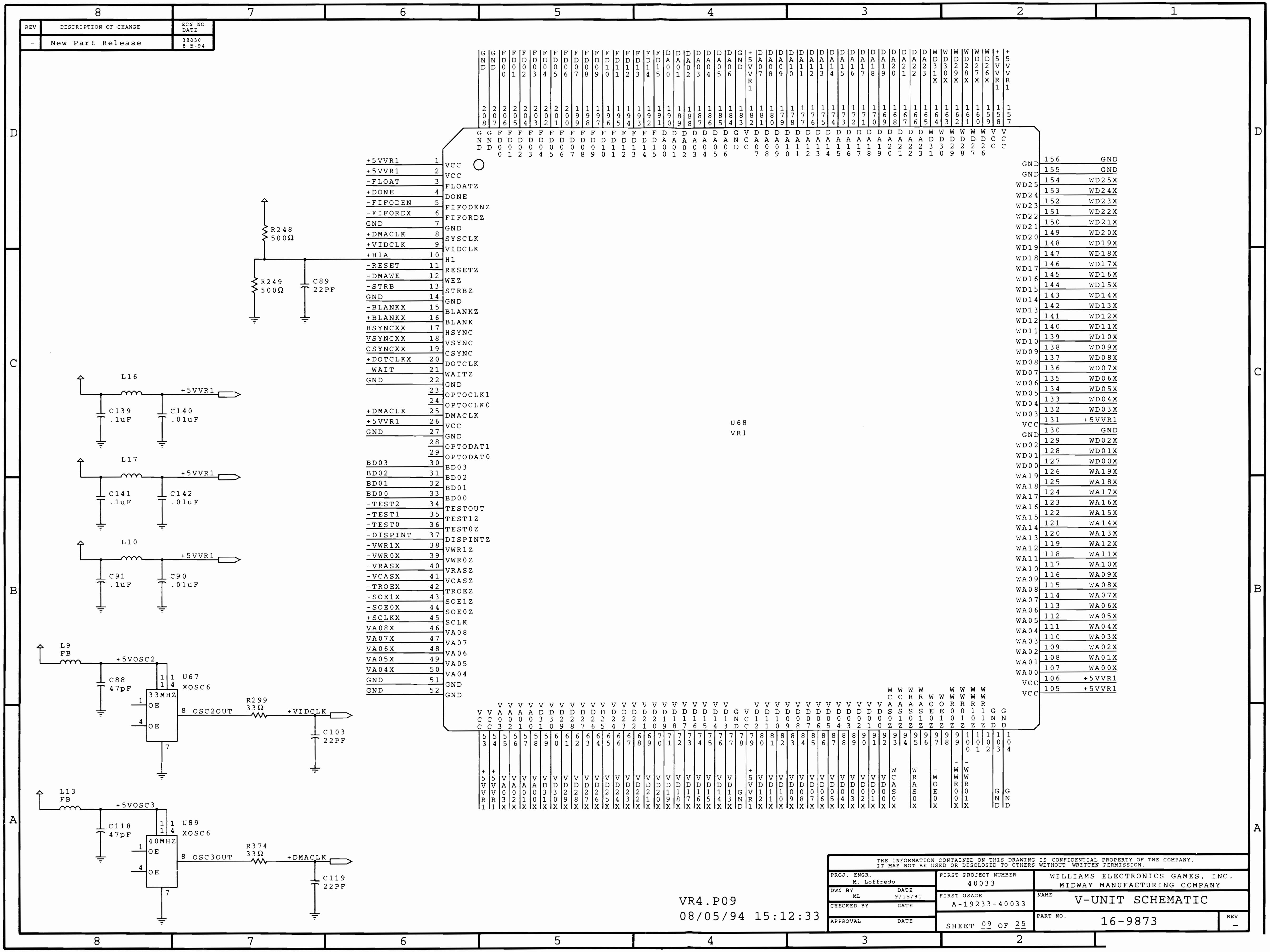
WAVE RAM



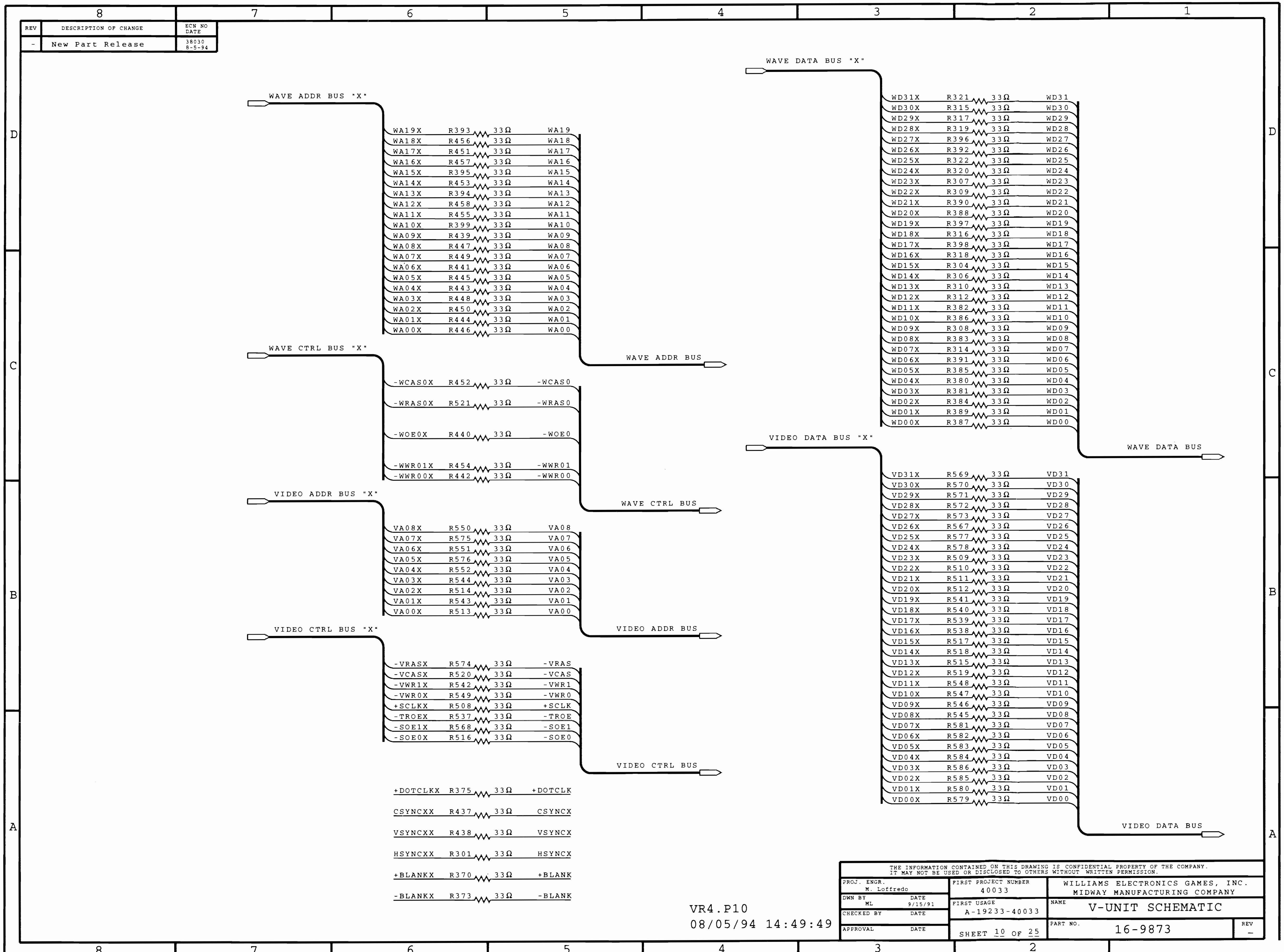
VR4.P08
08/05/94 15:12:30

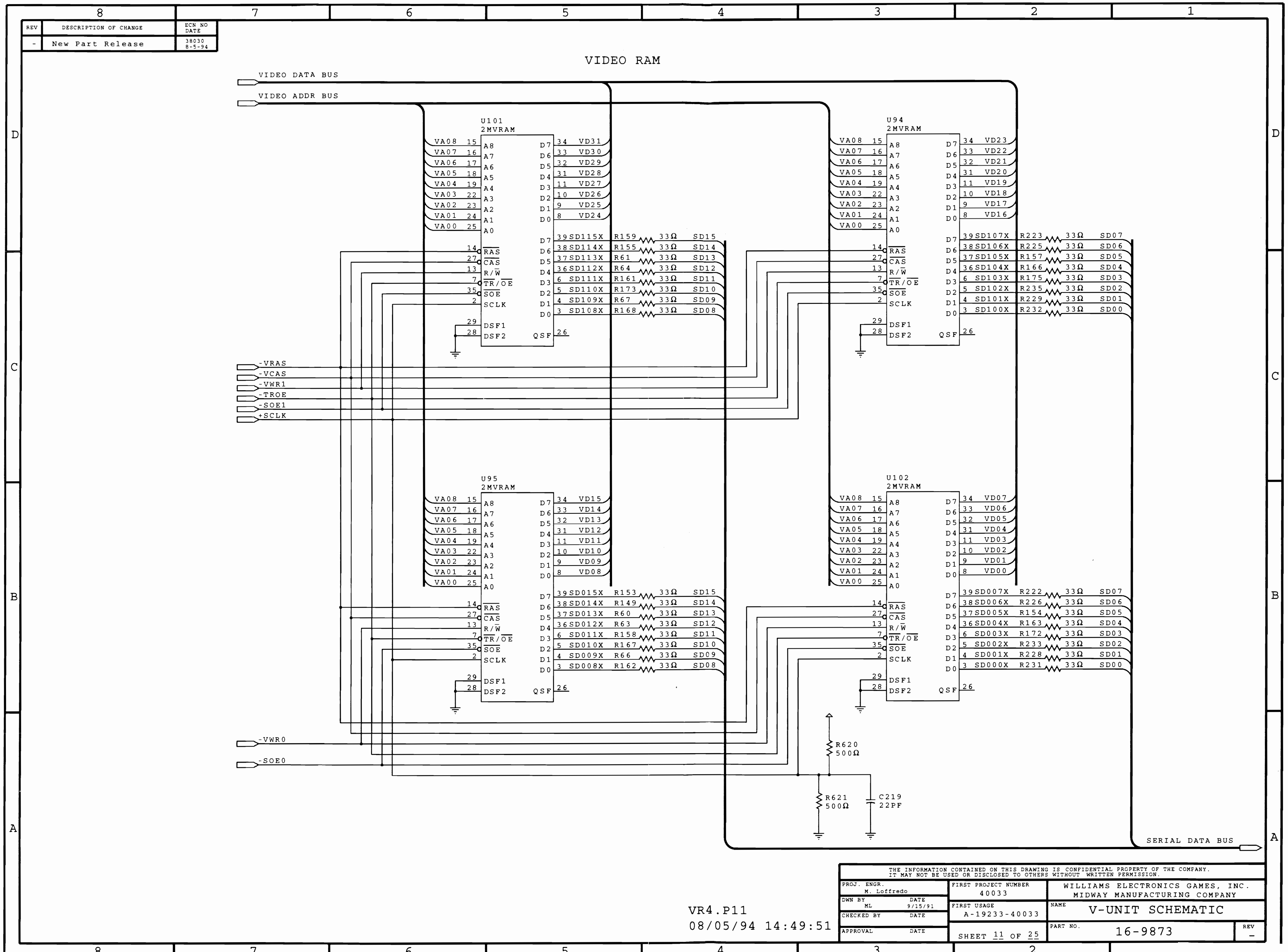
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.

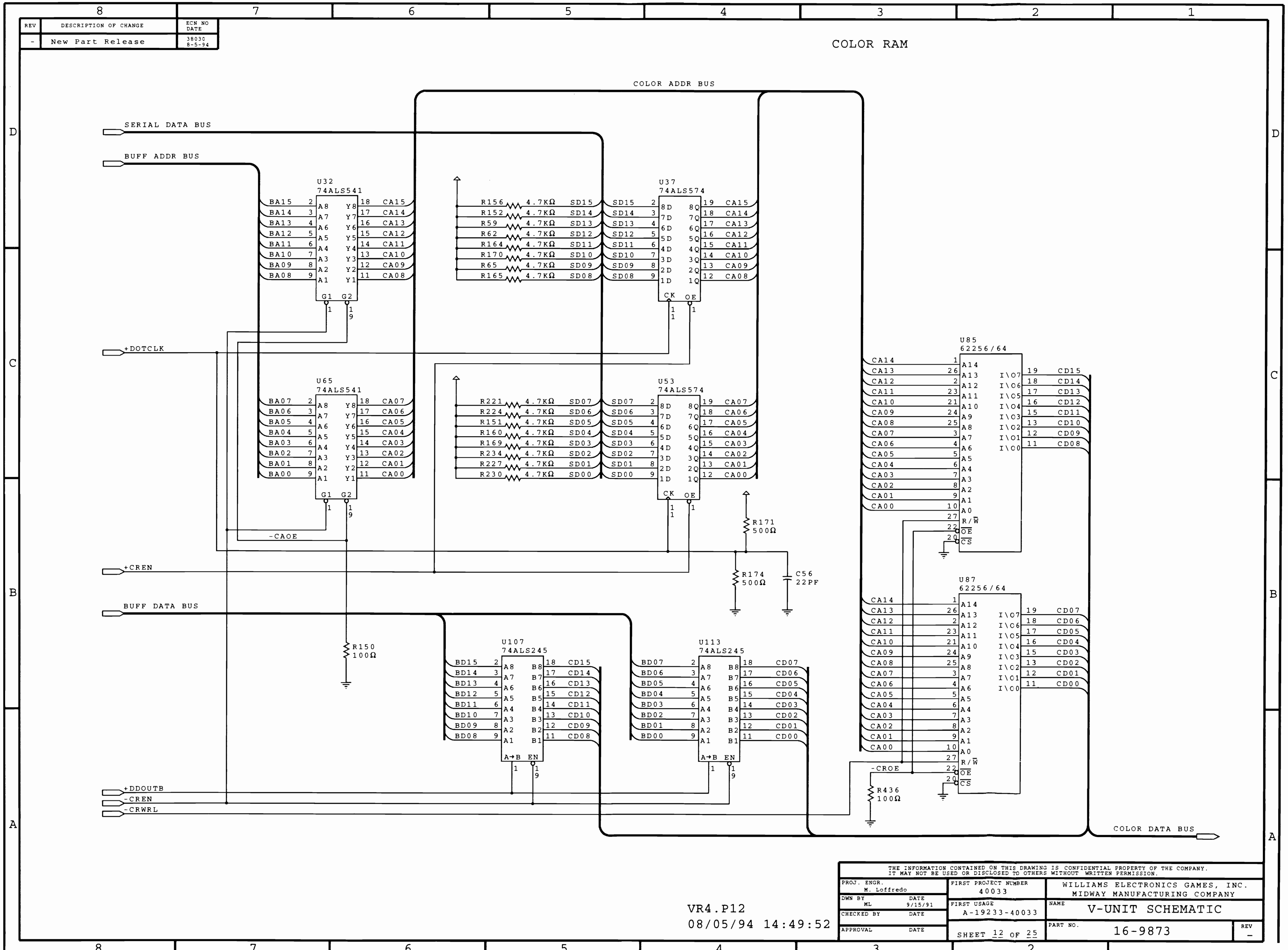
PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 08 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -



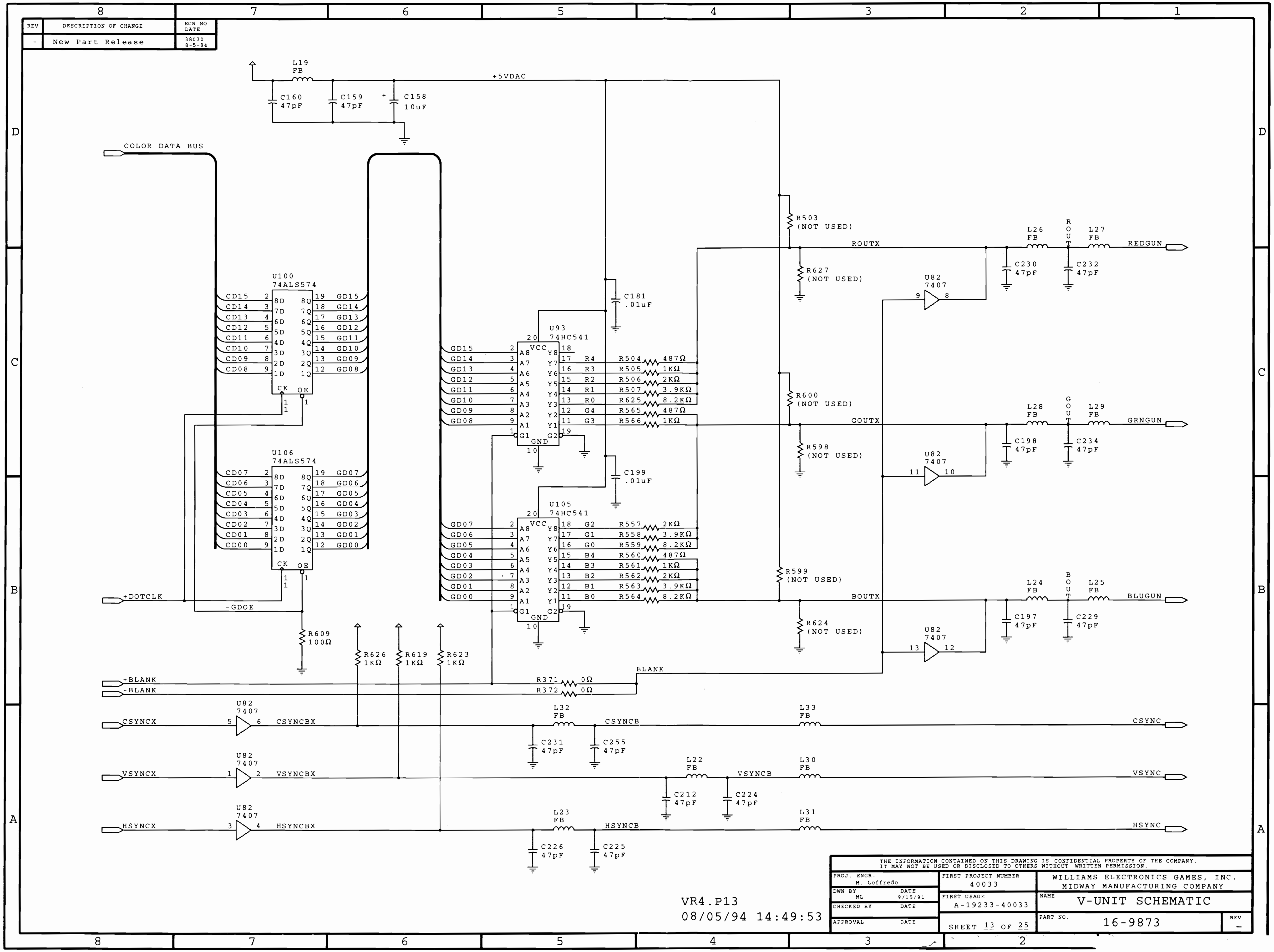
REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | New Part Release | 38030 8-5-94
U68
VR1
+5VVR1 1 VCC
+5VVR1 2 VCC
-FLOAT 3 FLOATZ
+DONE 4 DONE
-FIFODEN 5 FIFODENZ
-FIFORDX 6 FIFORDZ
GND 7 GND
+DMACLK 8 SYSCLK
+VIDCLK 9 VIDCLK
+H1A 10 H1
-RESET 11 RESETZ
-DMAWE 12 WEZ
-STRB 13 STRBZ
GND 14 GND
-BLANKX 15 BLANKZ
+BLANKX 16 BLANK
HSYNCXX 17 HSYNC
VSYNCXX 18 VSYNC
CSYNCXX 19 CSYNC
+DOTCLKX 20 DOTCLK
-WAIT 21 WAITZ
GND 22 GND
23 OPTOCLK1
24 OPTOCLK0
+DMACLK 25 DMACLK
+5VVR1 26 VCC
GND 27 GND
28 OPTODAT1
29 OPTODAT0
BD03 30 BD03
BD02 31 BD02
BD01 32 BD01
BD00 33 BD00
-TEST2 34 TESTOUT
-TEST1 35 TEST1Z
-TEST0 36 TEST0Z
-DISPINT 37 DISPINTZ
-VWR1X 38 VWR1Z
-VWR0X 39 VWR0Z
-VRASX 40 VRASZ
-VCASX 41 VCASZ
-TROEX 42 TROEZ
-SOE1X 43 SOE1Z
-SOE0X 44 SOE0Z
+SCLKX 45 SCLK
VA08X 46 VA08
VA07X 47 VA07
VA06X 48 VA06
VA05X 49 VA05
VA04X 50 VA04
GND 51 GND
GND 52 GND
GND 156 GND
GND 155 GND
WD25 154 WD25X
WD24 153 WD24X
WD23 152 WD23X
WD22 151 WD22X
WD21 150 WD21X
WD20 149 WD20X
WD19 148 WD19X
WD18 147 WD18X
WD17 146 WD17X
WD16 145 WD16X
WD15 144 WD15X
WD14 143 WD14X
WD13 142 WD13X
WD12 141 WD12X
WD11 140 WD11X
WD10 139 WD10X
WD09 138 WD09X
WD08 137 WD08X
WD07 136 WD07X
WD06 135 WD06X
WD05 134 WD05X
WD04 133 WD04X
WD03 132 WD03X
VCC 131 +5VVR1
GND 130 GND
WD02 129 WD02X
WD01 128 WD01X
WD00 127 WD00X
WA19 126 WA19X
WA18 125 WA18X
WA17 124 WA17X
WA16 123 WA16X
WA15 122 WA15X
WA14 121 WA14X
WA13 120 WA13X
WA12 119 WA12X
WA11 118 WA11X
WA10 117 WA10X
WA09 116 WA09X
WA08 115 WA08X
WA07 114 WA07X
WA06 113 WA06X
WA05 112 WA05X
WA04 111 WA04X
WA03 110 WA03X
WA02 109 WA02X
WA01 108 WA01X
WA00 107 WA00X
VCC 106 +5VVR1
VCC 105 +5VVR1
R248 500Ω
R249 500Ω
C89 22PF
L16 +5VVR1
C139 .1uF
C140 .01uF
L17 +5VVR1
C141 .1uF
C142 .01uF
L10 +5VVR1
C91 .1uF
C90 .01uF
L9 FB +5VOSC2
C88 47pF
U67 XOSC6 33MHZ
OE
8 OSC2OUT
R299 33Ω
+VIDCLK
C103 22PF
L13 FB +5VOSC3
C118 47pF
U89 XOSC6 40MHZ
8 OSC3OUT
R374 33Ω
+DMACLK
C119 22PF
VR4.P09
08/05/94 15:12:33
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PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/93
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 09 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

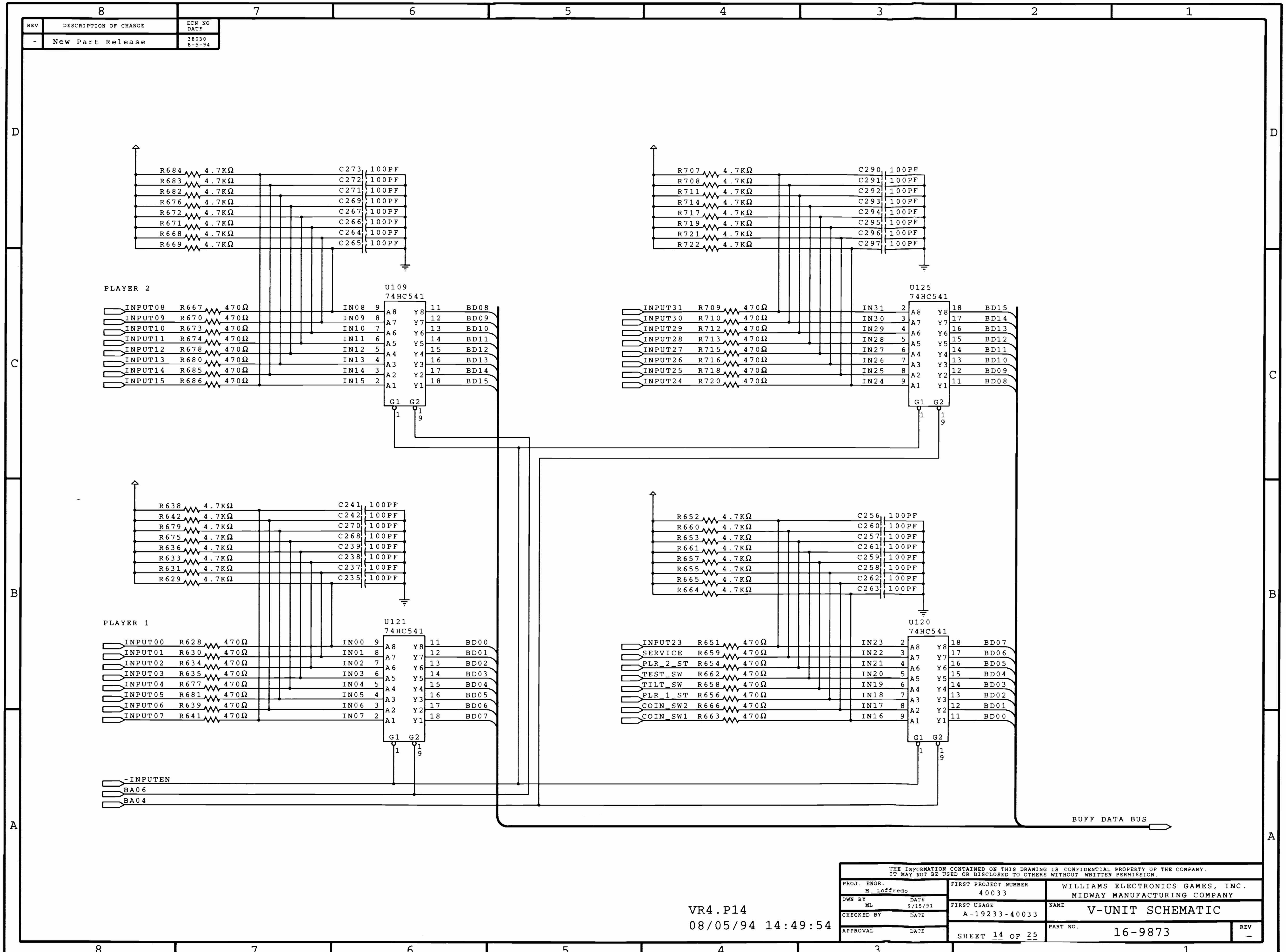

REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | New Part Release | 38030 8-5-94
WAVE ADDR BUS "X"
WA19X R393 33Ω WA19
WA18X R456 33Ω WA18
WA17X R451 33Ω WA17
WA16X R457 33Ω WA16
WA15X R395 33Ω WA15
WA14X R453 33Ω WA14
WA13X R394 33Ω WA13
WA12X R458 33Ω WA12
WA11X R455 33Ω WA11
WA10X R399 33Ω WA10
WA09X R439 33Ω WA09
WA08X R447 33Ω WA08
WA07X R449 33Ω WA07
WA06X R441 33Ω WA06
WA05X R445 33Ω WA05
WA04X R443 33Ω WA04
WA03X R448 33Ω WA03
WA02X R450 33Ω WA02
WA01X R444 33Ω WA01
WA00X R446 33Ω WA00
WAVE ADDR BUS
WAVE CTRL BUS "X"
-WCAS0X R452 33Ω -WCAS0
-WRAS0X R521 33Ω -WRAS0
-WOE0X R440 33Ω -WOE0
-WWR01X R454 33Ω -WWR01
-WWR00X R442 33Ω -WWR00
WAVE CTRL BUS
VIDEO ADDR BUS "X"
VA08X R550 33Ω VA08
VA07X R575 33Ω VA07
VA06X R551 33Ω VA06
VA05X R576 33Ω VA05
VA04X R552 33Ω VA04
VA03X R544 33Ω VA03
VA02X R514 33Ω VA02
VA01X R543 33Ω VA01
VA00X R513 33Ω VA00
VIDEO ADDR BUS
VIDEO CTRL BUS "X"
-VRASX R574 33Ω -VRAS
-VCASX R520 33Ω -VCAS
-VWR1X R542 33Ω -VWR1
-VWR0X R549 33Ω -VWR0
+SCLKX R508 33Ω +SCLK
-TROEX R537 33Ω -TROE
-SOE1X R568 33Ω -SOE1
-SOE0X R516 33Ω -SOE0
VIDEO CTRL BUS
+DOTCLKX R375 33Ω +DOTCLK
CSYNCXX R437 33Ω CSYNCX
VSYNCXX R438 33Ω VSYNCX
HSYNCXX R301 33Ω HSYNCX
+BLANKX R370 33Ω +BLANK
-BLANKX R373 33Ω -BLANK
WAVE DATA BUS "X"
WD31X R321 33Ω WD31
WD30X R315 33Ω WD30
WD29X R317 33Ω WD29
WD28X R319 33Ω WD28
WD27X R396 33Ω WD27
WD26X R392 33Ω WD26
WD25X R322 33Ω WD25
WD24X R320 33Ω WD24
WD23X R307 33Ω WD23
WD22X R309 33Ω WD22
WD21X R390 33Ω WD21
WD20X R388 33Ω WD20
WD19X R397 33Ω WD19
WD18X R316 33Ω WD18
WD17X R398 33Ω WD17
WD16X R318 33Ω WD16
WD15X R304 33Ω WD15
WD14X R306 33Ω WD14
WD13X R310 33Ω WD13
WD12X R312 33Ω WD12
WD11X R382 33Ω WD11
WD10X R386 33Ω WD10
WD09X R308 33Ω WD09
WD08X R383 33Ω WD08
WD07X R314 33Ω WD07
WD06X R391 33Ω WD06
WD05X R385 33Ω WD05
WD04X R380 33Ω WD04
WD03X R381 33Ω WD03
WD02X R384 33Ω WD02
WD01X R389 33Ω WD01
WD00X R387 33Ω WD00
WAVE DATA BUS
VIDEO DATA BUS "X"
VD31X R569 33Ω VD31
VD30X R570 33Ω VD30
VD29X R571 33Ω VD29
VD28X R572 33Ω VD28
VD27X R573 33Ω VD27
VD26X R567 33Ω VD26
VD25X R577 33Ω VD25
VD24X R578 33Ω VD24
VD23X R509 33Ω VD23
VD22X R510 33Ω VD22
VD21X R511 33Ω VD21
VD20X R512 33Ω VD20
VD19X R541 33Ω VD19
VD18X R540 33Ω VD18
VD17X R539 33Ω VD17
VD16X R538 33Ω VD16
VD15X R517 33Ω VD15
VD14X R518 33Ω VD14
VD13X R515 33Ω VD13
VD12X R519 33Ω VD12
VD11X R548 33Ω VD11
VD10X R547 33Ω VD10
VD09X R546 33Ω VD09
VD08X R545 33Ω VD08
VD07X R581 33Ω VD07
VD06X R582 33Ω VD06
VD05X R583 33Ω VD05
VD04X R584 33Ω VD04
VD03X R586 33Ω VD03
VD02X R585 33Ω VD02
VD01X R580 33Ω VD01
VD00X R579 33Ω VD00
VIDEO DATA BUS
VR4.P10
08/05/94 14:49:49
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PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 10 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -


VIDEO RAM
REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | New Part Release | 38030 8-5-94
VIDEO DATA BUS
VIDEO ADDR BUS
U101 2MVRAM
U94 2MVRAM
U95 2MVRAM
U102 2MVRAM
-VRAS
-VCAS
-VWR1
-TROE
-SOE1
+SCLK
-VWR0
-SOE0
R620 500Ω
R621 500Ω
C219 22PF
SERIAL DATA BUS
VR4.P11
08/05/94 14:49:51
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PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 11 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

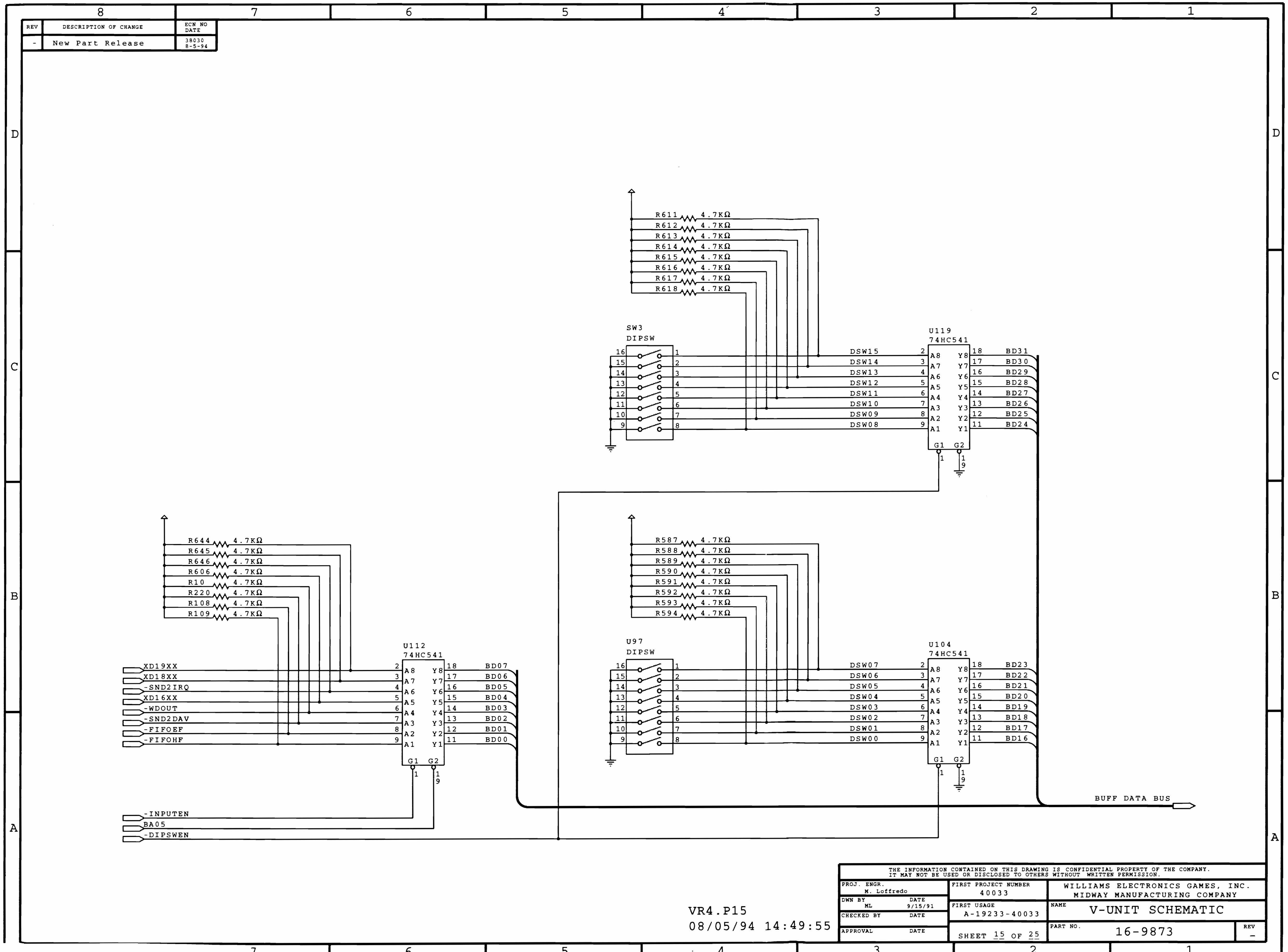


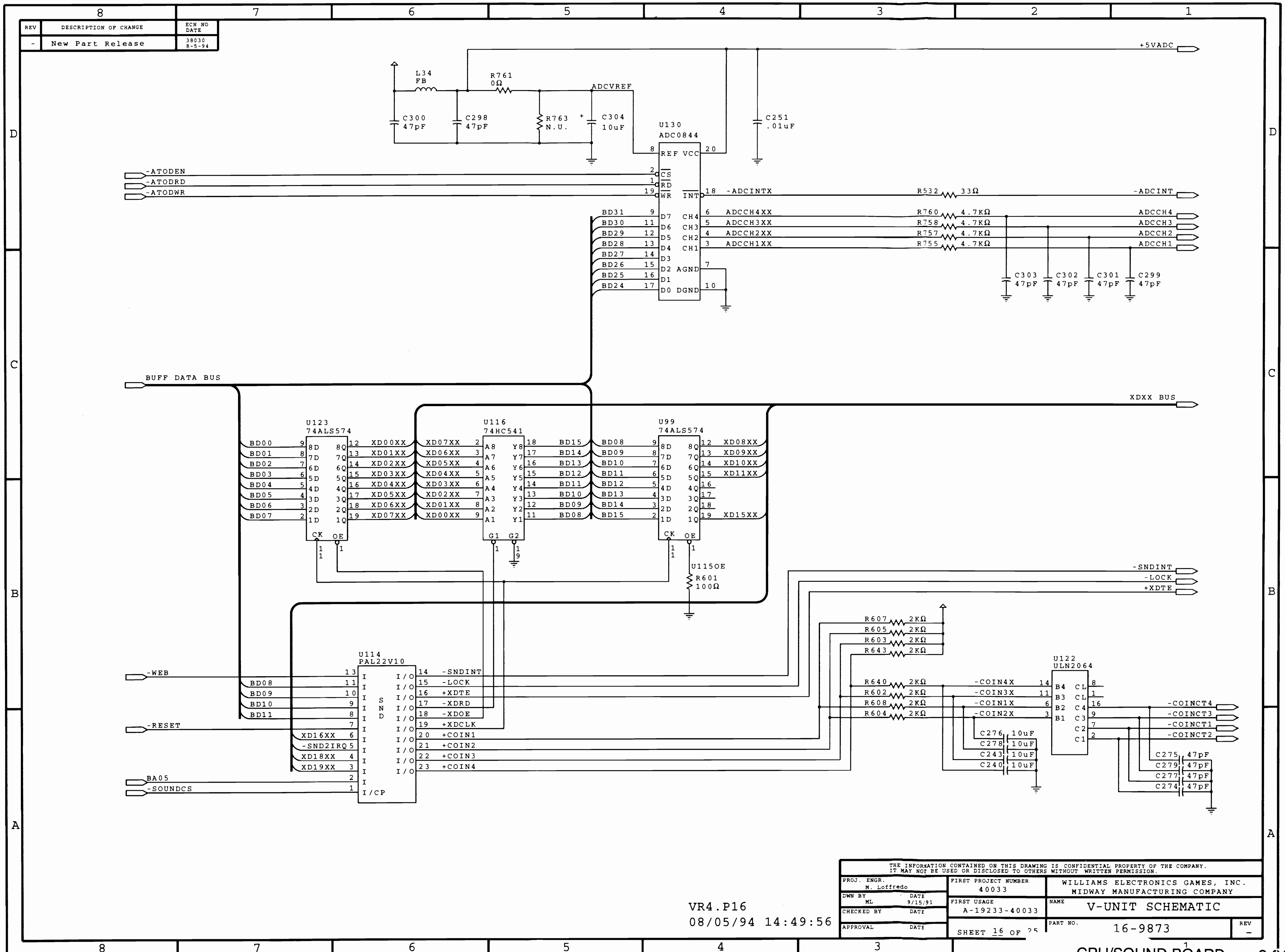
REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030 8-5-94
COLOR RAM
COLOR ADDR BUS
SERIAL DATA BUS
BUFF ADDR BUS
U32
74ALS541
U37
74ALS574
U65
74ALS541
U53
74ALS574
U85
62256/64
U87
62256/64
+DOTCLK
-CAOE
+CREN
BUFF DATA BUS
R171
500Ω
R174
500Ω
C56
22PF
R150
100Ω
U107
74ALS245
U113
74ALS245
-CROE
R436
100Ω
+DDOUTB
-CREN
-CRWRL
COLOR DATA BUS
VR4.P12
08/05/94 14:49:52
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PROJ. ENGR. M. Loffredo
DWN BY ML
DATE 9/15/91
CHECKED BY
DATE
APPROVAL
DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 12 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -


REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030
8-5-94
L19 FB
+5VDAC
C160 47pF
C159 47pF
C158 10uF
COLOR DATA BUS
U100 74ALS574
U106 74ALS574
U93 74HC541
U105 74HC541
C181 .01uF
C199 .01uF
R503 (NOT USED)
R627 (NOT USED)
R600 (NOT USED)
R598 (NOT USED)
R599 (NOT USED)
R624 (NOT USED)
ROUTX
GOUTX
BOUTX
U82 7407
L26 FB
L27 FB
REDGUN
C230 47pF
C232 47pF
L28 FB
L29 FB
GRNGUN
C198 47pF
C234 47pF
L24 FB
L25 FB
BLUGUN
C197 47pF
C229 47pF
R504 487Ω
R505 1KΩ
R506 2KΩ
R507 3.9KΩ
R625 8.2KΩ
R565 487Ω
R566 1KΩ
R557 2KΩ
R558 3.9KΩ
R559 8.2KΩ
R560 487Ω
R561 1KΩ
R562 2KΩ
R563 3.9KΩ
R564 8.2KΩ
+DOTCLK
-GDOE
R609 100Ω
R626 1KΩ
R619 1KΩ
R623 1KΩ
+BLANK
-BLANK
R371 0Ω
R372 0Ω
BLANK
CSYNCX
CSYNCBX
L32 FB
CSYNCB
C231 47pF
C255 47pF
L33 FB
CSYNC
VSYNCX
VSYNCBX
L22 FB
VSYNCB
C212 47pF
C224 47pF
L30 FB
VSYNC
HSYNCX
HSYNCBX
L23 FB
HSYNCB
C226 47pF
C225 47pF
L31 FB
HSYNC
VR4.P13
08/05/94 14:49:53
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PROJ. ENGR. M. Loffredo
FIRST PROJECT NUMBER 40033
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
DWN BY ML
DATE 9/15/91
FIRST USAGE A-19233-40033
NAME V-UNIT SCHEMATIC
CHECKED BY
DATE
APPROVAL
DATE
SHEET 13 OF 25
PART NO. 16-9873
REV -



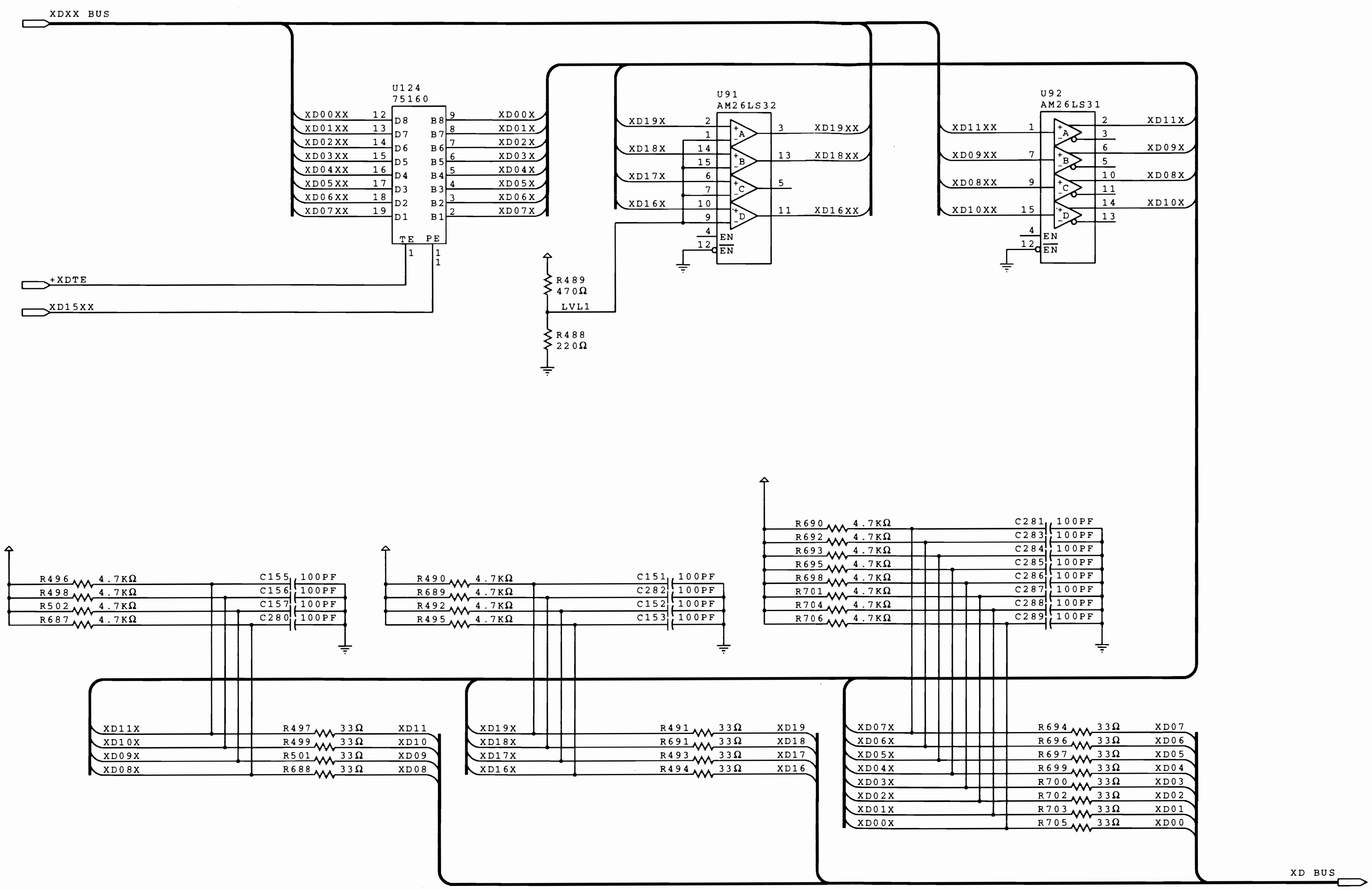
REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030 8-5-94
PLAYER 2
U109
74HC541
INPUT08 R667 470Ω IN08 BD08
INPUT09 R670 470Ω IN09 BD09
INPUT10 R673 470Ω IN10 BD10
INPUT11 R674 470Ω IN11 BD11
INPUT12 R678 470Ω IN12 BD12
INPUT13 R680 470Ω IN13 BD13
INPUT14 R685 470Ω IN14 BD14
INPUT15 R686 470Ω IN15 BD15
R684 R683 R682 R676 R672 R671 R668 R669 4.7KΩ
C273 C272 C271 C269 C267 C266 C264 C265 100PF
U125
74HC541
INPUT31 R709 470Ω IN31 BD15
INPUT30 R710 470Ω IN30 BD14
INPUT29 R712 470Ω IN29 BD13
INPUT28 R713 470Ω IN28 BD12
INPUT27 R715 470Ω IN27 BD11
INPUT26 R716 470Ω IN26 BD10
INPUT25 R718 470Ω IN25 BD09
INPUT24 R720 470Ω IN24 BD08
R707 R708 R711 R714 R717 R719 R721 R722 4.7KΩ
C290 C291 C292 C293 C294 C295 C296 C297 100PF
PLAYER 1
U121
74HC541
INPUT00 R628 470Ω IN00 BD00
INPUT01 R630 470Ω IN01 BD01
INPUT02 R634 470Ω IN02 BD02
INPUT03 R635 470Ω IN03 BD03
INPUT04 R677 470Ω IN04 BD04
INPUT05 R681 470Ω IN05 BD05
INPUT06 R639 470Ω IN06 BD06
INPUT07 R641 470Ω IN07 BD07
R638 R642 R679 R675 R636 R633 R631 R629 4.7KΩ
C241 C242 C270 C268 C239 C238 C237 C235 100PF
U120
74HC541
INPUT23 R651 470Ω IN23 BD07
SERVICE R659 470Ω IN22 BD06
PLR_2_ST R654 470Ω IN21 BD05
TEST_SW R662 470Ω IN20 BD04
TILT_SW R658 470Ω IN19 BD03
PLR_1_ST R656 470Ω IN18 BD02
COIN_SW2 R666 470Ω IN17 BD01
COIN_SW1 R663 470Ω IN16 BD00
R652 R660 R653 R661 R657 R655 R665 R664 4.7KΩ
C256 C260 C257 C261 C259 C258 C262 C263 100PF
-INPUTEN
BA06
BA04
BUFF DATA BUS
VR4.P14
08/05/94 14:49:54
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.
PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 14 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -


REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030 8-5-94
R611 4.7KΩ
R612 4.7KΩ
R613 4.7KΩ
R614 4.7KΩ
R615 4.7KΩ
R616 4.7KΩ
R617 4.7KΩ
R618 4.7KΩ
SW3
DIPSW
U119
74HC541
DSW15
DSW14
DSW13
DSW12
DSW11
DSW10
DSW09
DSW08
BD31
BD30
BD29
BD28
BD27
BD26
BD25
BD24
R644 4.7KΩ
R645 4.7KΩ
R646 4.7KΩ
R606 4.7KΩ
R10 4.7KΩ
R220 4.7KΩ
R108 4.7KΩ
R109 4.7KΩ
R587 4.7KΩ
R588 4.7KΩ
R589 4.7KΩ
R590 4.7KΩ
R591 4.7KΩ
R592 4.7KΩ
R593 4.7KΩ
R594 4.7KΩ
U112
74HC541
XD19XX
XD18XX
-SND2IRQ
XD16XX
-WDOUT
-SND2DAV
-FIFOEF
-FIFOHF
BD07
BD06
BD05
BD04
BD03
BD02
BD01
BD00
U97
DIPSW
U104
74HC541
DSW07
DSW06
DSW05
DSW04
DSW03
DSW02
DSW01
DSW00
BD23
BD22
BD21
BD20
BD19
BD18
BD17
BD16
BUFF DATA BUS
-INPUTEN
BA05
-DIPSWEN
VR4.P15
08/05/94 14:49:55
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.
PROJ. ENGR. M. Loffredo
FIRST PROJECT NUMBER 40033
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
DWN BY ML DATE 9/15/91
FIRST USAGE A-19233-40033
NAME V-UNIT SCHEMATIC
CHECKED BY DATE
APPROVAL DATE
SHEET 15 OF 25
PART NO. 16-9873
REV -



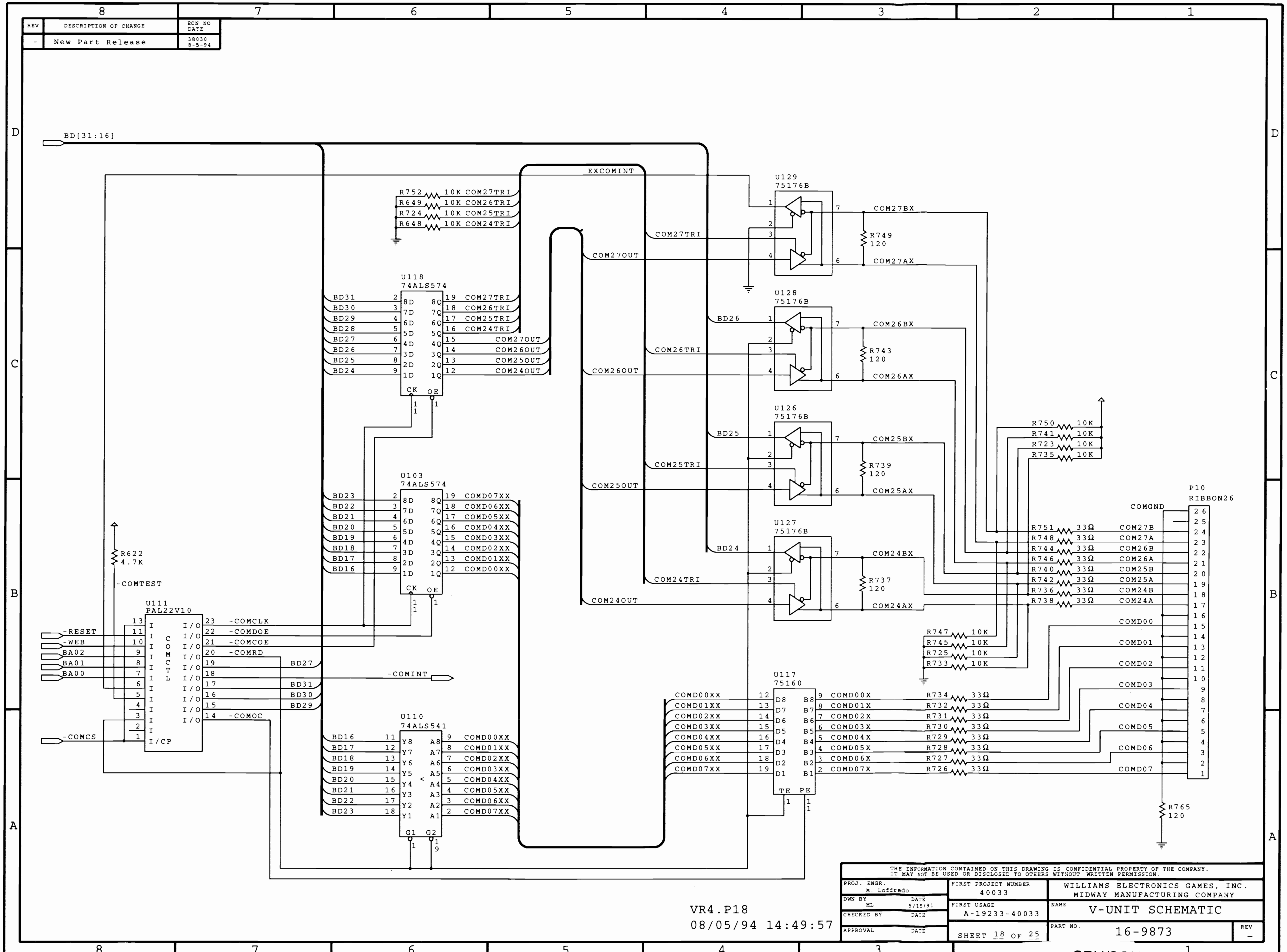
REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030 8-5-94
+5VADC
L34 FB
R761 0Ω
ADCVREF
C300 47pF
C298 47pF
R763 N.U.
C304 10uF
C251 .01uF
U130 ADC0844
-ATODEN
-ATODRD
-ATODWR
-ADCINTX
R532 33Ω
-ADCINT
ADCCH4XX
ADCCH3XX
ADCCH2XX
ADCCH1XX
R760 4.7KΩ
R758 4.7KΩ
R757 4.7KΩ
R755 4.7KΩ
ADCCH4
ADCCH3
ADCCH2
ADCCH1
C303 47pF
C302 47pF
C301 47pF
C299 47pF
BUFF DATA BUS
XDXX BUS
U123 74ALS574
U116 74HC541
U99 74ALS574
U115OE
R601 100Ω
-SNDINT
-LOCK
+XDTE
U114 PAL22V10
-WEB
-RESET
BA05
-SOUNDCS
XD16XX
-SND2IRQ
XD18XX
XD19XX
-XDRD
-XDOE
+XDCLK
+COIN1
+COIN2
+COIN3
+COIN4
R607 2KΩ
R605 2KΩ
R603 2KΩ
R643 2KΩ
R640 2KΩ
R602 2KΩ
R608 2KΩ
R604 2KΩ
-COIN4X
-COIN3X
-COIN1X
-COIN2X
C276 10uF
C278 10uF
C243 10uF
C240 10uF
U122 ULN2064
-COINCT4
-COINCT3
-COINCT1
-COINCT2
C275 47pF
C279 47pF
C277 47pF
C274 47pF
VR4.P16
08/05/94 14:49:56
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.
PROJ. ENGR. M. Loffredo
DWN BY ML DATE 9/15/91
CHECKED BY DATE
APPROVAL DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 16 OF 25
WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	New Part Release	38030 8-5-94



VR4.P17
08/05/94 14:49:56

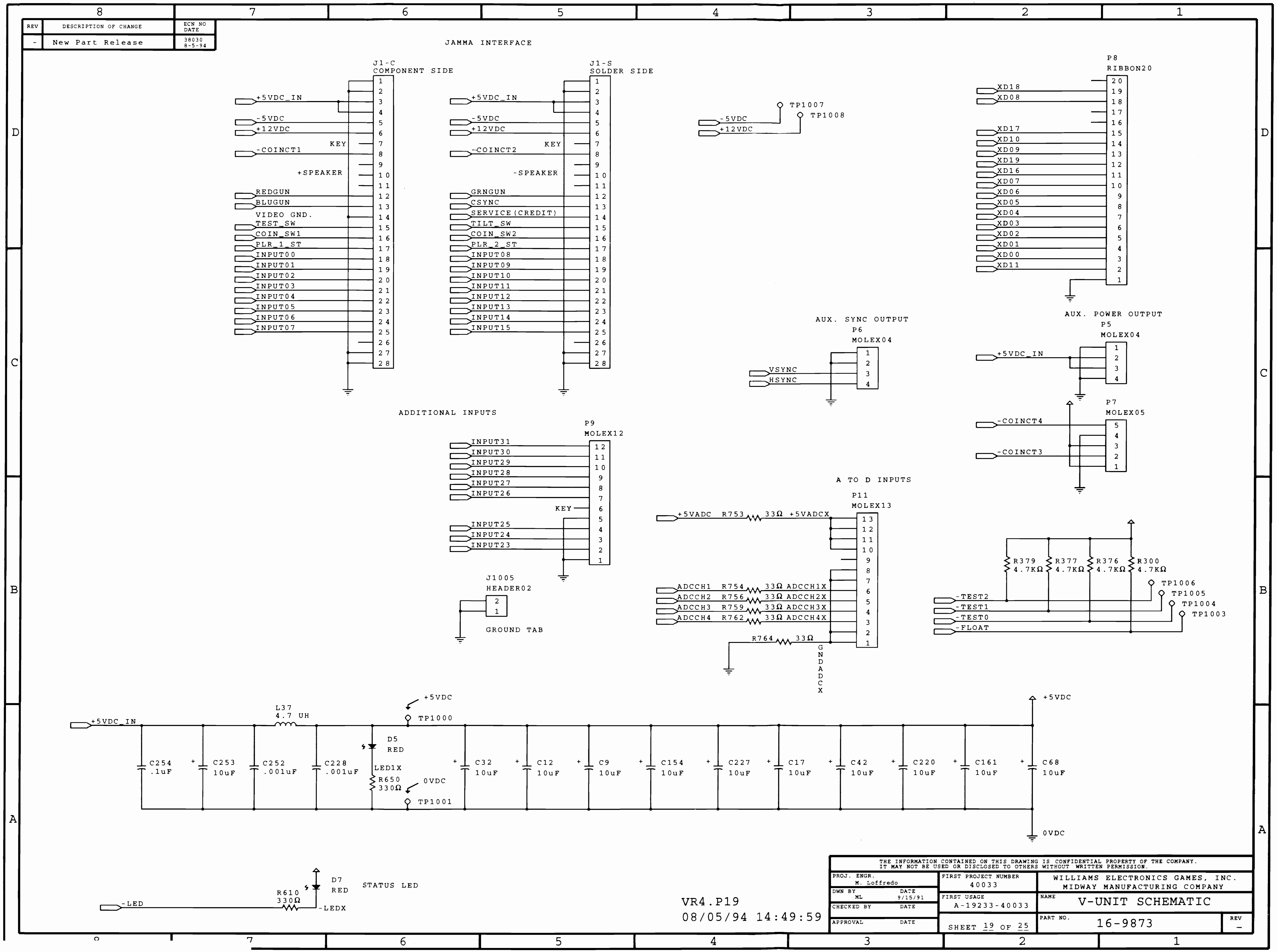
PROJ. ENGR. M. Loffredo	FIRST PROJECT NUMBER 40033	WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY	
DWN BY ML DATE 9/15/91	FIRST USAGE A-19233-40033	NAME V-UNIT SCHEMATIC	
CHECKED BY DATE			
APPROVAL DATE	SHEET 17 OF 25	PART NO. 16-9873	REV -



VR4.P18
08/05/94 14:49:57

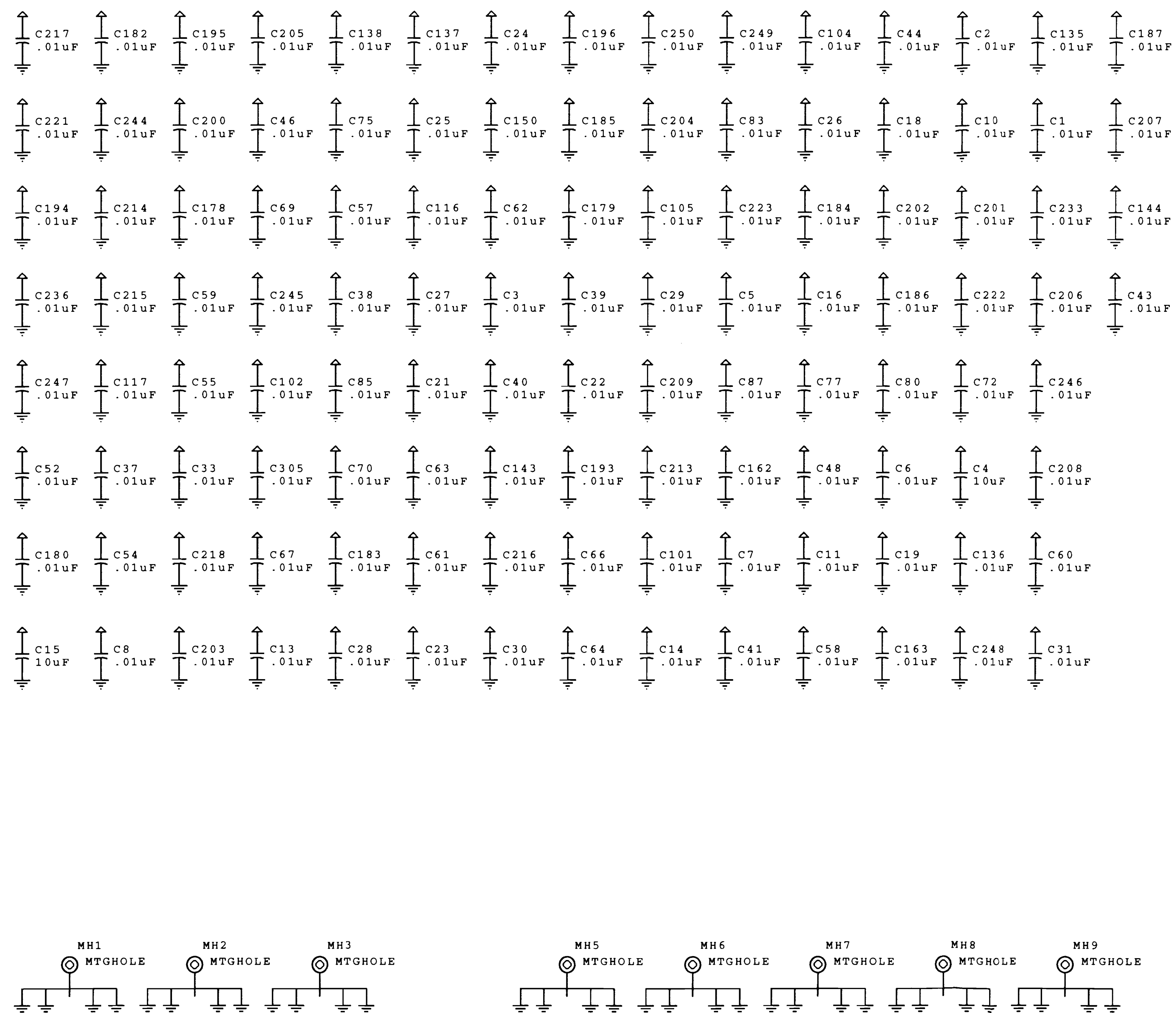
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.

PROJ. ENGR. M. Loffredo	FIRST PROJECT NUMBER 40033	WILLIAMS ELECTRONICS GAMES, INC. MIDWAY MANUFACTURING COMPANY	
DWN BY ML DATE 9/15/91	FIRST USAGE A-19233-40033	NAME V-UNIT SCHEMATIC	
CHECKED BY DATE			
APPROVAL DATE	SHEET 18 OF 25	PART NO. 16-9873	REV -



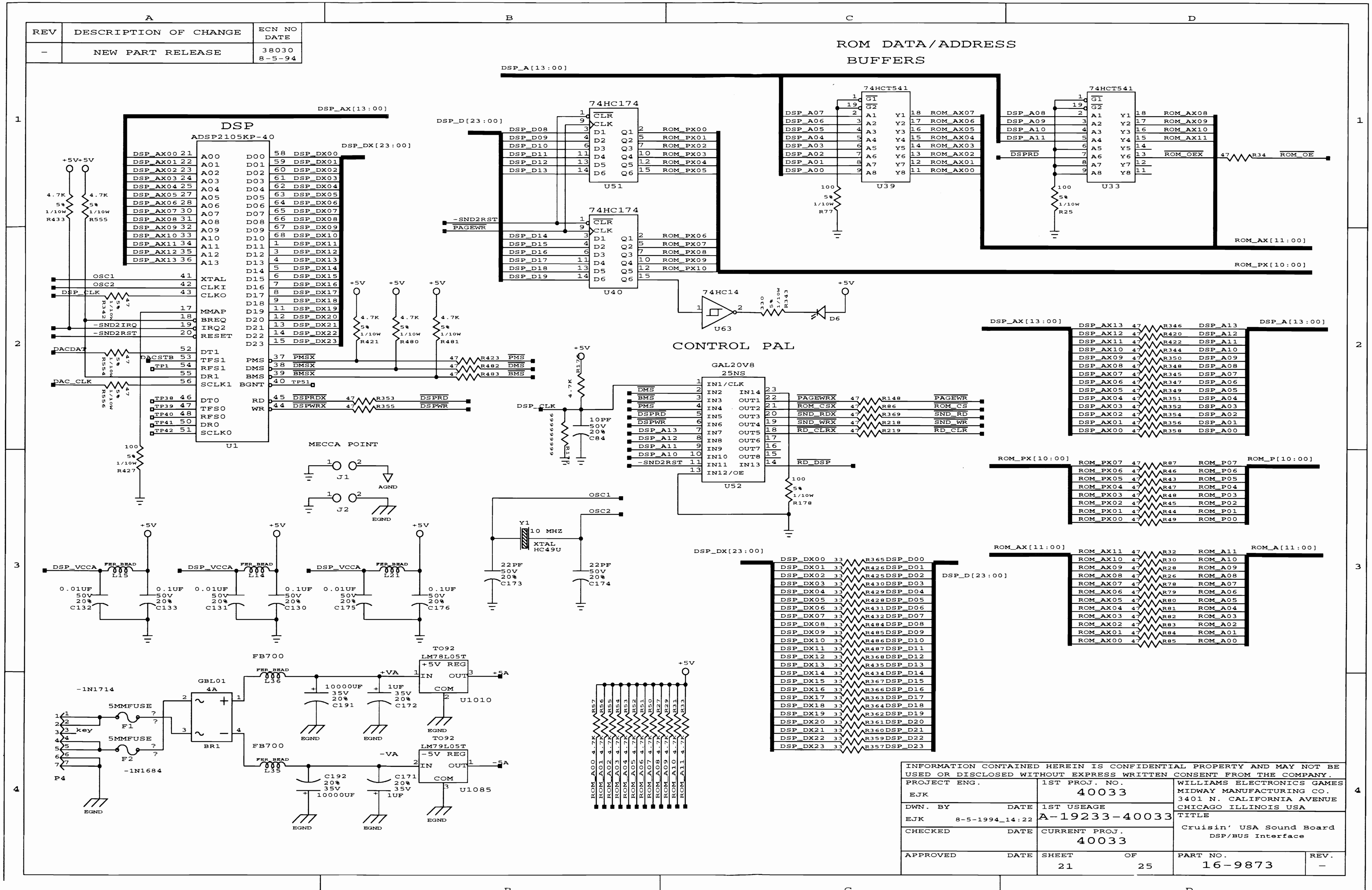
REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
New Part Release
38030
8-5-94
JAMMA INTERFACE
J1-C
COMPONENT SIDE
J1-S
SOLDER SIDE
+5VDC_IN
-5VDC
+12VDC
KEY
-COINCT1
-COINCT2
+SPEAKER
-SPEAKER
REDGUN
BLUGUN
VIDEO GND.
GRNGUN
CSYNC
SERVICE(CREDIT)
TEST_SW
TILT_SW
COIN_SW1
COIN_SW2
PLR_1_ST
PLR_2_ST
INPUT00
INPUT01
INPUT02
INPUT03
INPUT04
INPUT05
INPUT06
INPUT07
INPUT08
INPUT09
INPUT10
INPUT11
INPUT12
INPUT13
INPUT14
INPUT15
TP1007
TP1008
P8
RIBBON20
XD18
XD08
XD17
XD10
XD09
XD19
XD16
XD07
XD06
XD05
XD04
XD03
XD02
XD01
XD00
XD11
AUX. SYNC OUTPUT
P6
MOLEX04
VSYNC
HSYNC
AUX. POWER OUTPUT
P5
MOLEX04
P7
MOLEX05
-COINCT4
-COINCT3
ADDITIONAL INPUTS
P9
MOLEX12
INPUT31
INPUT30
INPUT29
INPUT28
INPUT27
INPUT26
INPUT25
INPUT24
INPUT23
J1005
HEADER02
GROUND TAB
A TO D INPUTS
P11
MOLEX13
+5VADC
R753
33Ω
+5VADCX
ADCCH1
R754
33Ω ADCCH1X
ADCCH2
R756
33Ω ADCCH2X
ADCCH3
R759
33Ω ADCCH3X
ADCCH4
R762
33Ω ADCCH4X
R764
33Ω
GNDADCX
R379
4.7KΩ
R377
4.7KΩ
R376
4.7KΩ
R300
4.7KΩ
TP1006
TP1005
TP1004
TP1003
-TEST2
-TEST1
-TEST0
-FLOAT
L37
4.7 UH
+5VDC
TP1000
D5
RED
LED1X
R650
330Ω
0VDC
TP1001
C254
.1uF
C253
10uF
C252
.001uF
C228
.001uF
C32
10uF
C12
10uF
C9
10uF
C154
10uF
C227
10uF
C17
10uF
C42
10uF
C220
10uF
C161
10uF
C68
10uF
D7
RED
STATUS LED
R610
330Ω
-LED
-LEDX
VR4.P19
08/05/94 14:49:59
THE INFORMATION CONTAINED ON THIS DRAWING IS CONFIDENTIAL PROPERTY OF THE COMPANY. IT MAY NOT BE USED OR DISCLOSED TO OTHERS WITHOUT WRITTEN PERMISSION.
PROJ. ENGR. M. Loffredo
DWN BY ML
DATE 9/15/91
CHECKED BY
APPROVAL
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 19 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -

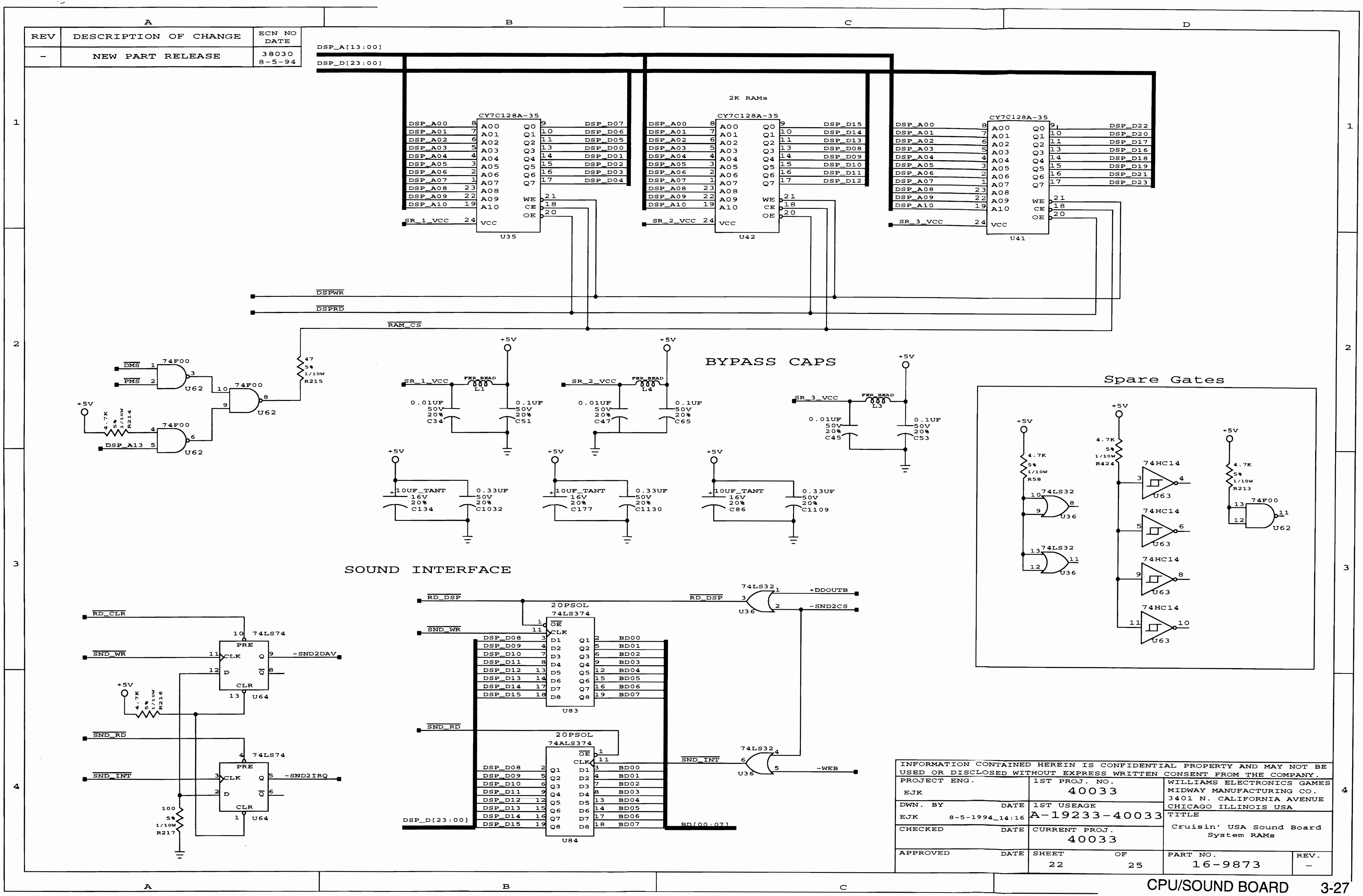
REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	New Part Release	38030 8-5-94



VR4.P20
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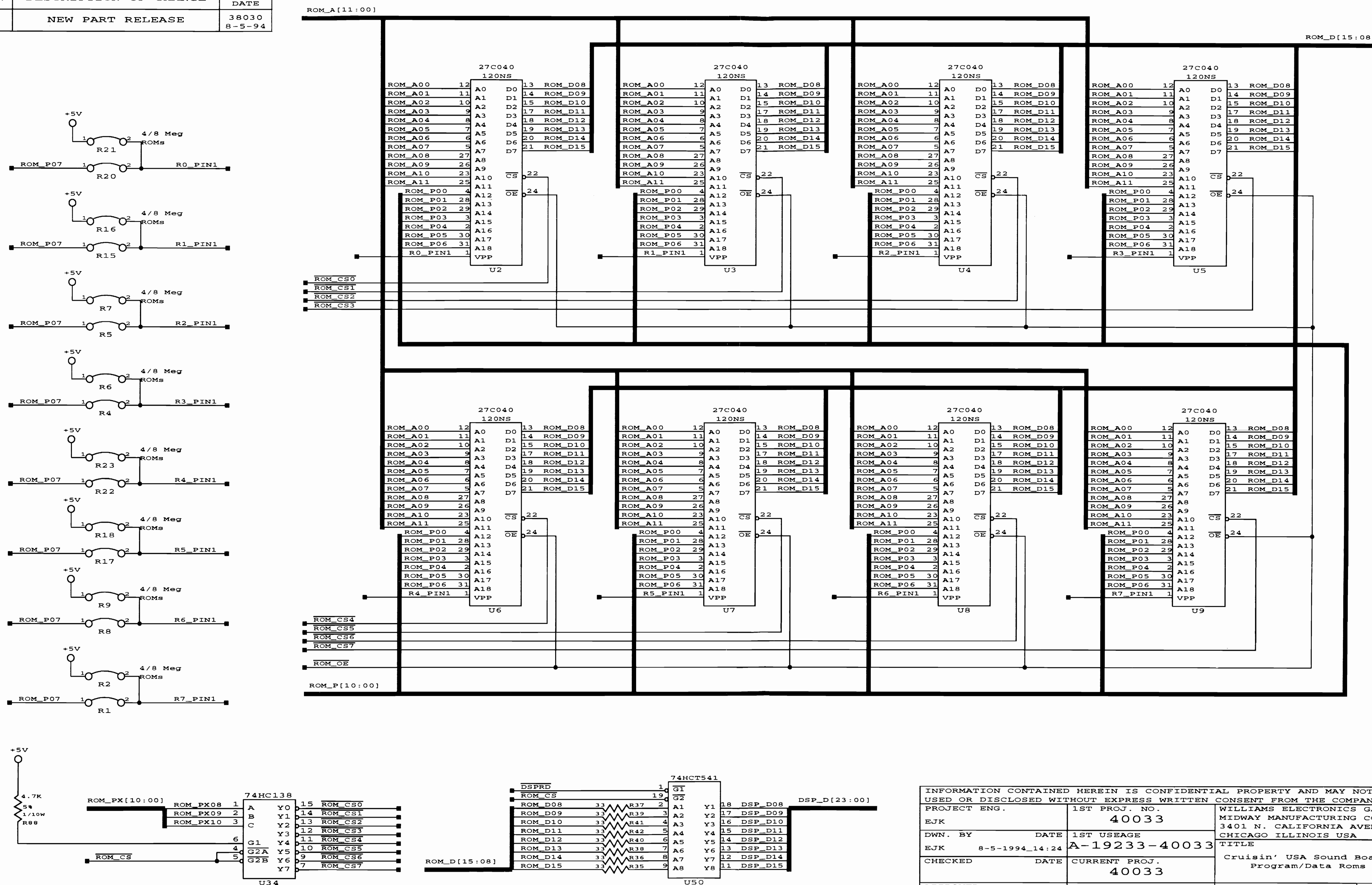
PROJ. ENGR. M. Loffredo
DWN BY ML — DATE 9/15/91
CHECKED BY — DATE
APPROVAL — DATE
FIRST PROJECT NUMBER 40033
FIRST USAGE A-19233-40033
SHEET 20 OF 25
WILLIAMS ELECTRONICS GAMES, INC.
MIDWAY MANUFACTURING COMPANY
NAME V-UNIT SCHEMATIC
PART NO. 16-9873
REV -


REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | NEW PART RELEASE | 38030 8-5-94
ROM DATA/ADDRESS BUFFERS
DSP
ADSP2105KP-40
CONTROL PAL
GAL20V8 25NS
74HC174
74HCT541
74HC14
MECCA POINT
DSP_AX[13:00]
DSP_DX[23:00]
DSP_D[23:00]
DSP_A[13:00]
ROM_AX[11:00]
ROM_PX[10:00]
ROM_P[10:00]
ROM_A[11:00]
10 MHZ XTAL HC49U
LM78L05T +5V REG
LM79L05T -5V REG
INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.
PROJECT ENG. EJK
1ST PROJ. NO. 40033
WILLIAMS ELECTRONICS GAMES
MIDWAY MANUFACTURING CO.
3401 N. CALIFORNIA AVENUE
CHICAGO ILLINOIS USA
DWN. BY EJK DATE 8-5-1994_14:22
1ST USEAGE A-19233-40033
TITLE Cruisin' USA Sound Board DSP/BUS Interface
CHECKED DATE
CURRENT PROJ. 40033
APPROVED DATE
SHEET 21 OF 25
PART NO. 16-9873
REV. -



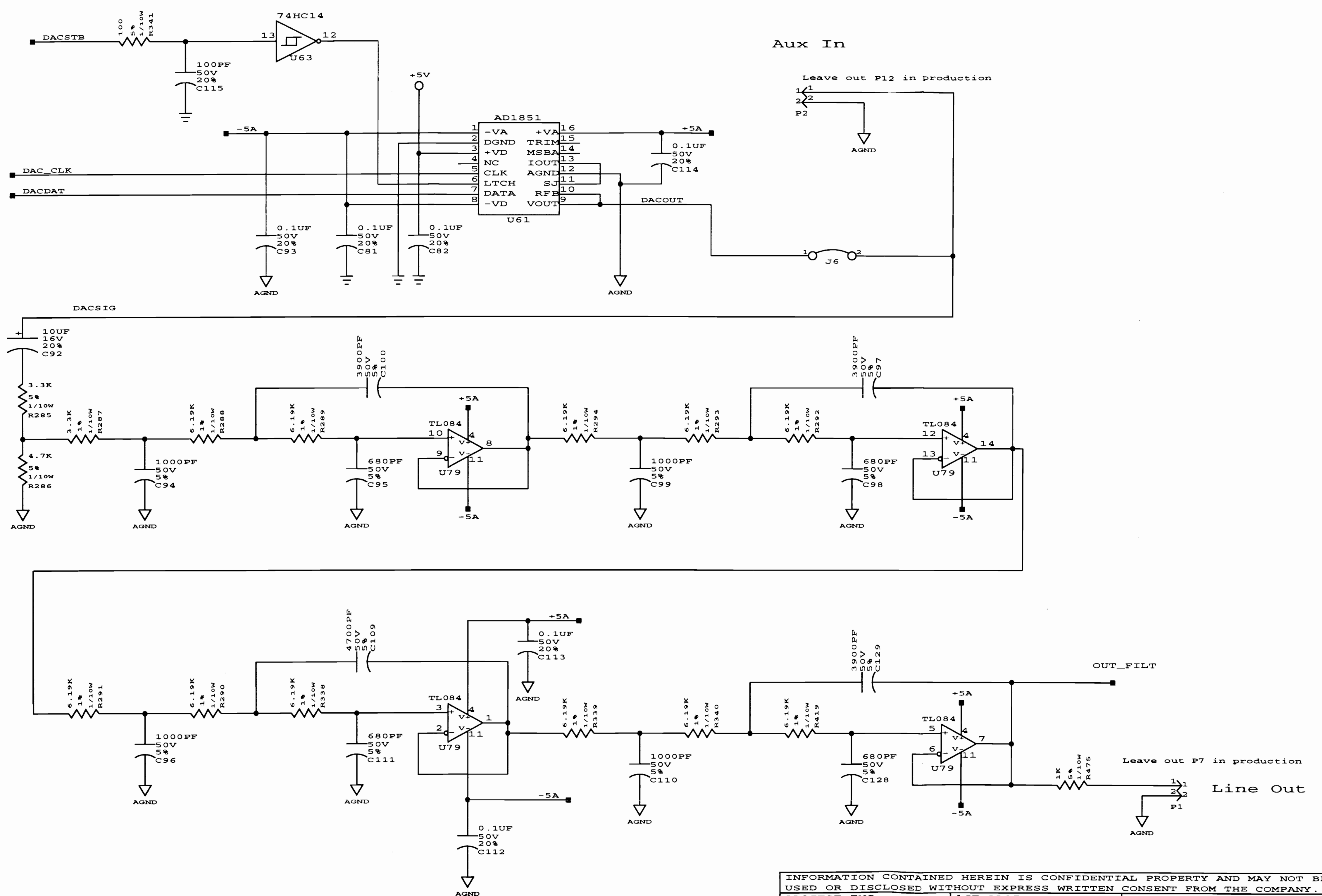
REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
NEW PART RELEASE
38030 8-5-94
DSP_A[13:00]
DSP_D[23:00]
2K RAMs
CY7C128A-35
U35
U42
U41
DSPWR
DSPRD
RAM_CS
74F00
U62
DMS
PMS
DSP_A13
47 5% 1/10W R215
BYPASS CAPS
SR_1_VCC
SR_2_VCC
SR_3_VCC
FER_BEAD
L1
L4
L3
0.01UF 50V 20% C34
0.1UF 50V 20% C51
0.01UF 50V 20% C47
0.1UF 50V 20% C65
0.01UF 50V 20% C45
0.1UF 50V 20% C53
10UF_TANT 16V 20% C134
0.33UF 50V 20% C1032
10UF_TANT 16V 20% C177
0.33UF 50V 20% C1130
10UF_TANT 16V 20% C86
0.33UF 50V 20% C1109
Spare Gates
74LS32
U36
74HC14
U63
4.7K 5% 1/10W R58
4.7K 5% 1/10W R424
4.7K 5% 1/10W R213
SOUND INTERFACE
RD_CLR
SND_WR
SND_RD
SND_INT
74LS74
U64
-SND2DAV
-SND2IRQ
4.7K 5% 1/10W R216
100 5% 1/10W R217
RD_DSP
20PSOL 74LS374
U83
20PSOL 74ALS374
U84
DSP_D[23:00]
BD[00:07]
+DDOUTB
-SND2CS
-WEB
INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.
PROJECT ENG. EJK
1ST PROJ. NO. 40033
WILLIAMS ELECTRONICS GAMES
MIDWAY MANUFACTURING CO.
3401 N. CALIFORNIA AVENUE
CHICAGO ILLINOIS USA
DWN. BY EJK
DATE 8-5-1994_14:16
1ST USEAGE A-19233-40033
TITLE
Cruisin' USA Sound Board
System RAMs
CHECKED
DATE
CURRENT PROJ. 40033
APPROVED
DATE
SHEET 22 OF 25
PART NO. 16-9873
REV. -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94



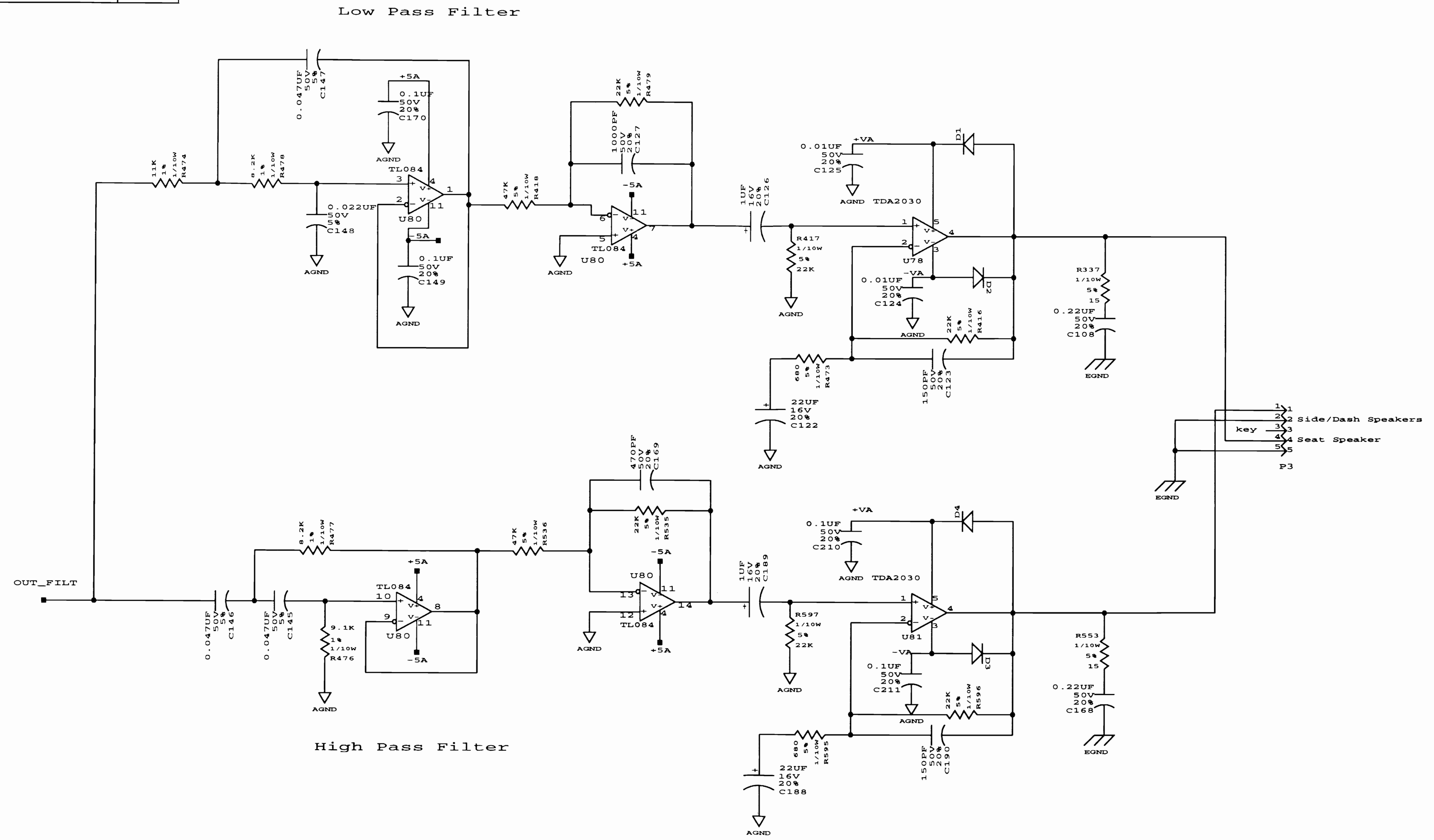
INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.		
PROJECT ENG. EJK	1ST PROJ. NO. 40033	WILLIAMS ELECTRONICS GAMES MIDWAY MANUFACTURING CO. 3401 N. CALIFORNIA AVENUE CHICAGO ILLINOIS USA
DWN. BY EJK DATE 8-5-1994_14:24	1ST USEAGE A-19233-40033	TITLE Cruisin' USA Sound Board Program/Data Roms
CHECKED DATE	CURRENT PROJ. 40033	
APPROVED DATE	SHEET 23 OF 25	PART NO. 16-9873 REV. -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94



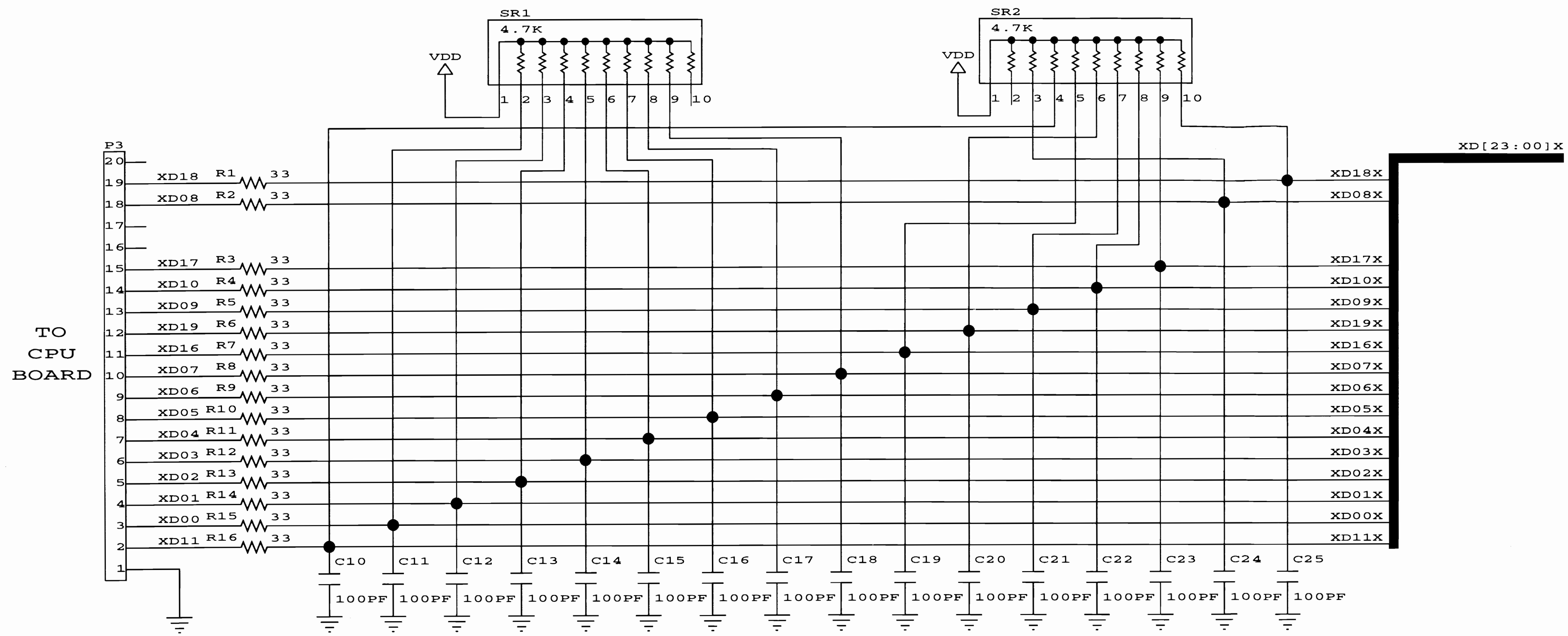
INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.			
PROJECT ENG. EJK	1ST PROJ. NO. 40033	WILLIAMS ELECTRONICS GAMES MIDWAY MANUFACTURING CO. 3401 N. CALIFORNIA AVENUE CHICAGO ILLINOIS USA	
DWN. BY EJK DATE 8-5-1994_14:25	1ST USEAGE A-19233-40033	TITLE Cruisin' USA Sound Board Digital To Analog Converter Anti-Aliasing Filter	
CHECKED DATE	CURRENT PROJ. 40033		
APPROVED DATE	SHEET 24 OF 25	PART NO. 16-9873	REV. -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94



INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.		
PROJECT ENG. EJK	1ST PROJ. NO. 40033	WILLIAMS ELECTRONICS GAMES MIDWAY MANUFACTURING CO. 3401 N. CALIFORNIA AVENUE CHICAGO ILLINOIS USA
DWN. BY EJK DATE 8-5-1994_14:18	1ST USEAGE A-19233-40033	TITLE Cruisin' USA Sound Board Active Crossover Power Amplifiers
CHECKED DATE	CURRENT PROJ. 40033	
APPROVED DATE	SHEET 25 OF 25	PART NO. 16-9873 REV. -

REV	DESCRIPTION OF CHANGE	ECN NO DATE
–	NEW PART RELEASE	38030 8-5-94

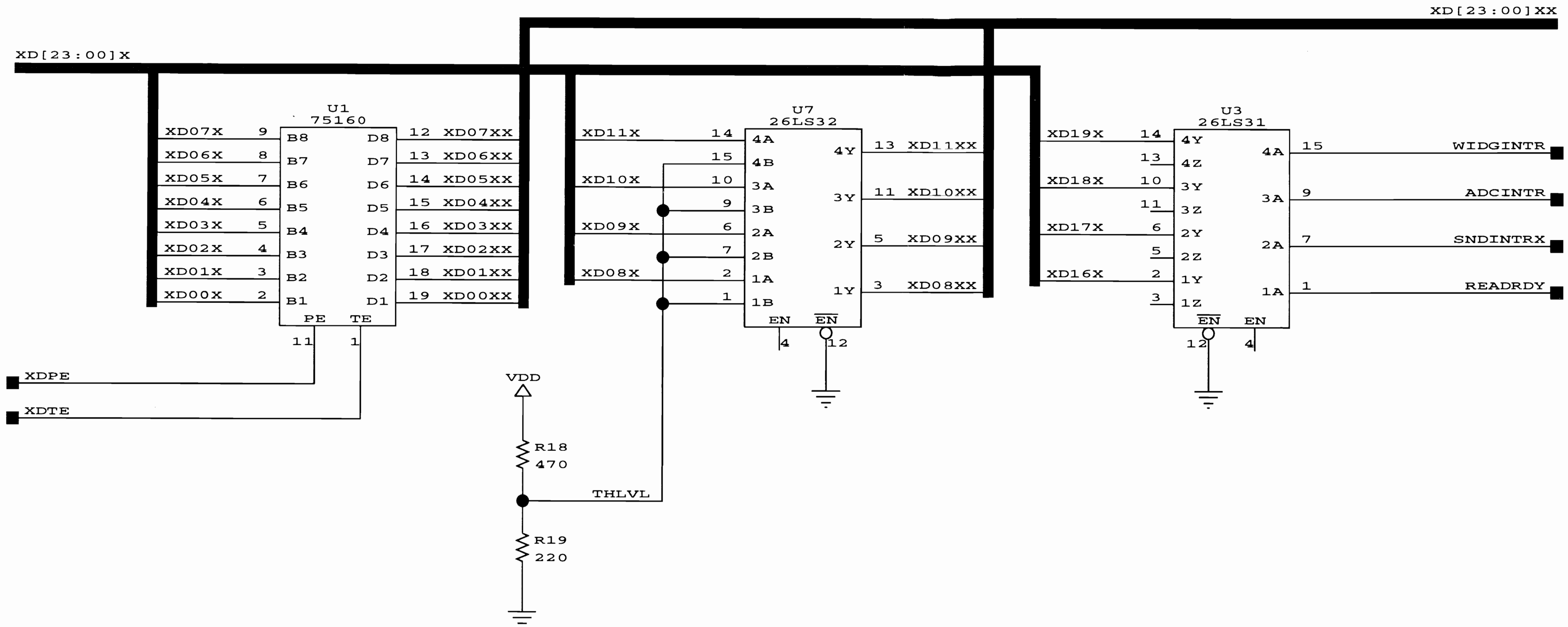


WHEEL 1
1-19-1994_11:53

INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.

PROJ. ENGR. M.L.	FIRST PROJECT 40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY G.S. DATE 12-30-93	FIRST USAGE A-18004 -40033	
CHECKED DATE	SHEET 1 OF 10	TITLE WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER 16-9677 REV. –

REV	DESCRIPTION OF CHANGE	ECN NO DATE
–	NEW PART RELEASE	38030 8-5-94



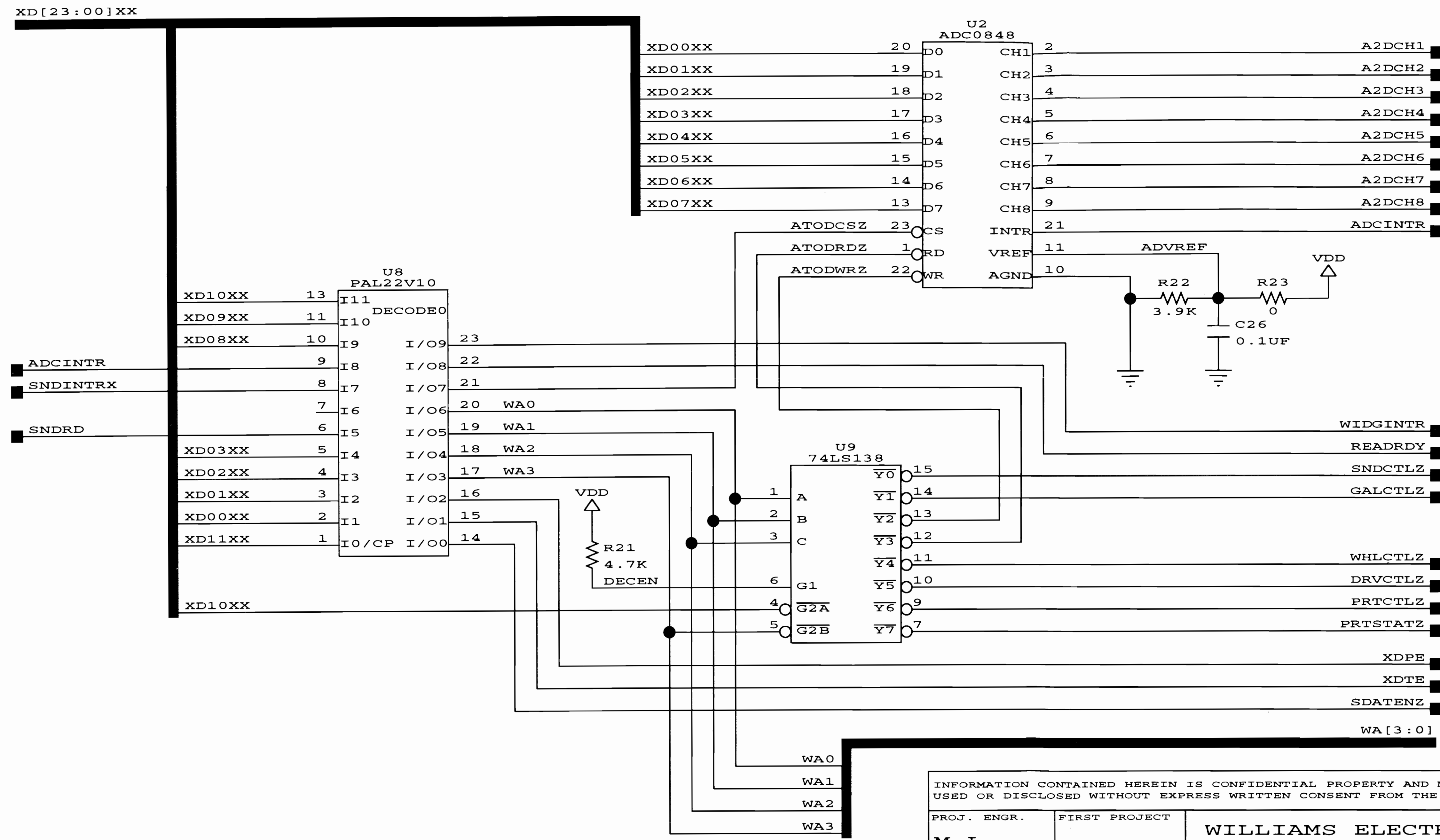
WHEEL 2

12-30-1993_11:03

INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.

PROJ. ENGR. M.L.	FIRST PROJECT 40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY G.S. DATE 12-30-93	FIRST USAGE A-18004 -40033	
CHECKED DATE	SHEET 2 OF 10	TITLE WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER 16-9677 REV. –

REV	DESCRIPTION OF CHANGE	ECN NO DATE
–	NEW PART RELEASE	38030 8-5-94

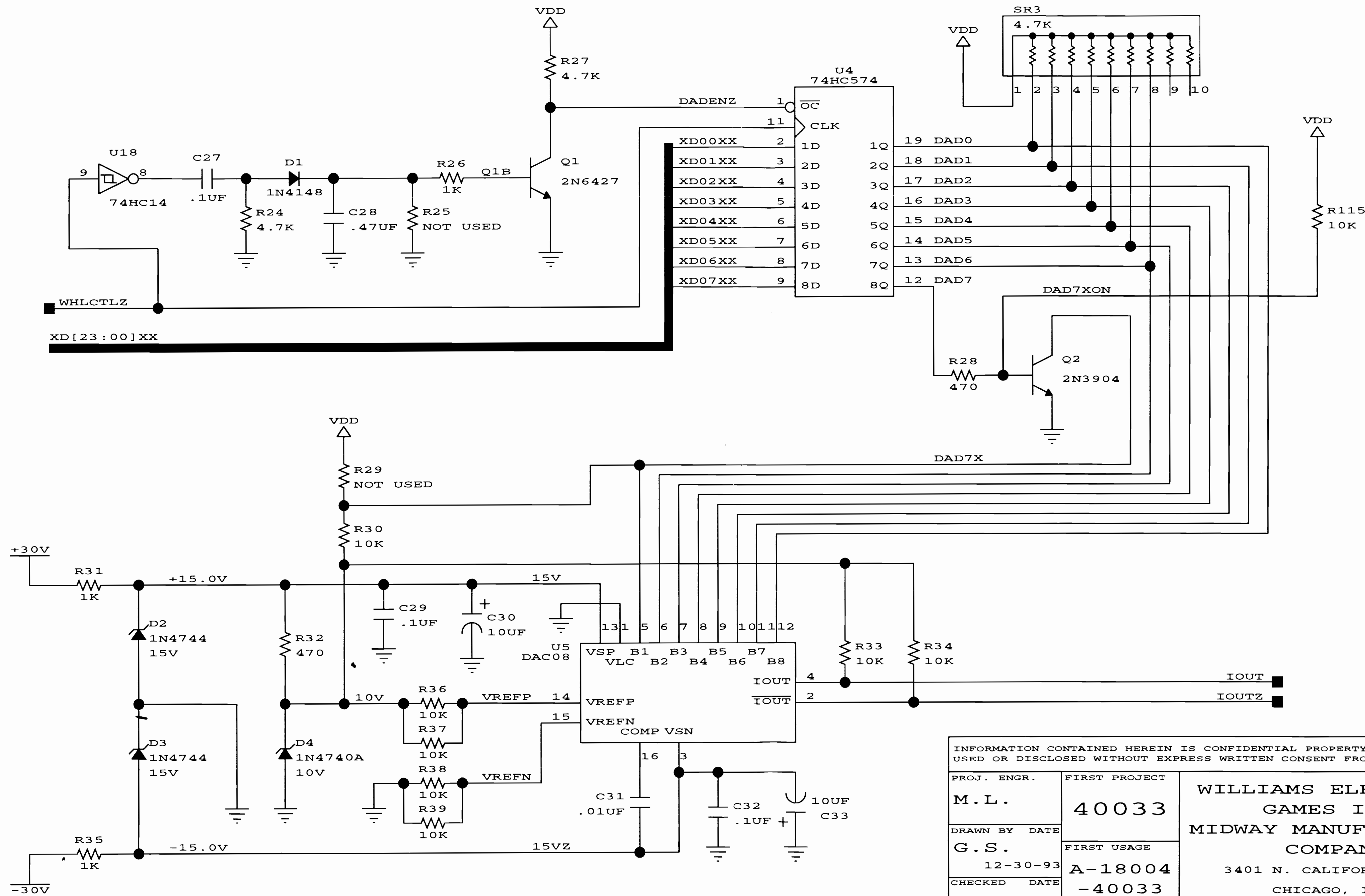


WHEEL 3
2-2-1994_18:27

INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.

PROJ. ENGR.	FIRST PROJECT	
M.L.	40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY DATE: G.S. 12-30-93	FIRST USAGE: A-18004 -40033	
CHECKED DATE	SHEET: 3 OF 10	TITLE: WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER: 16-9677 REV. –

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94

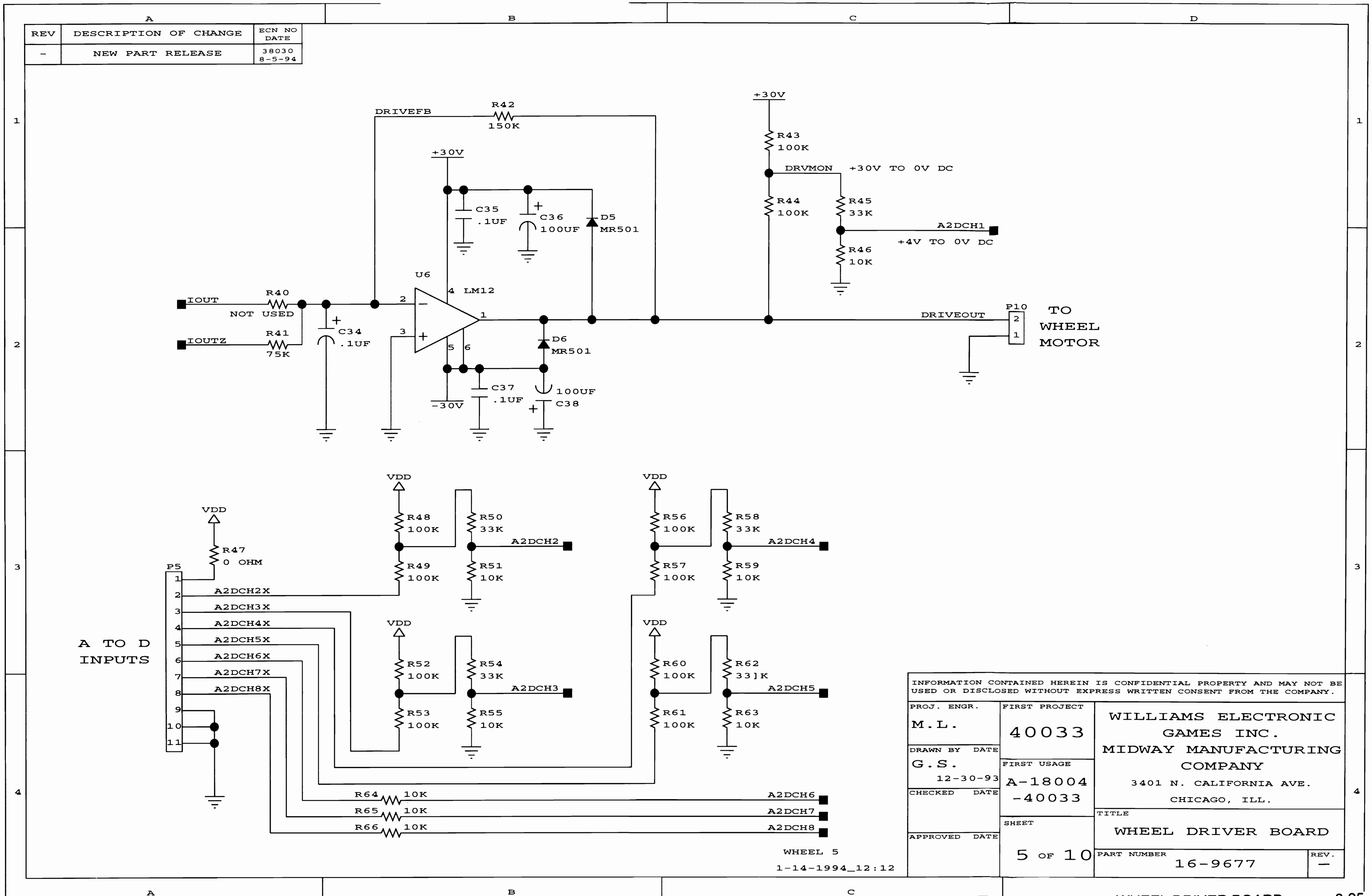


WHEEL 4

8-4-1994_13:56

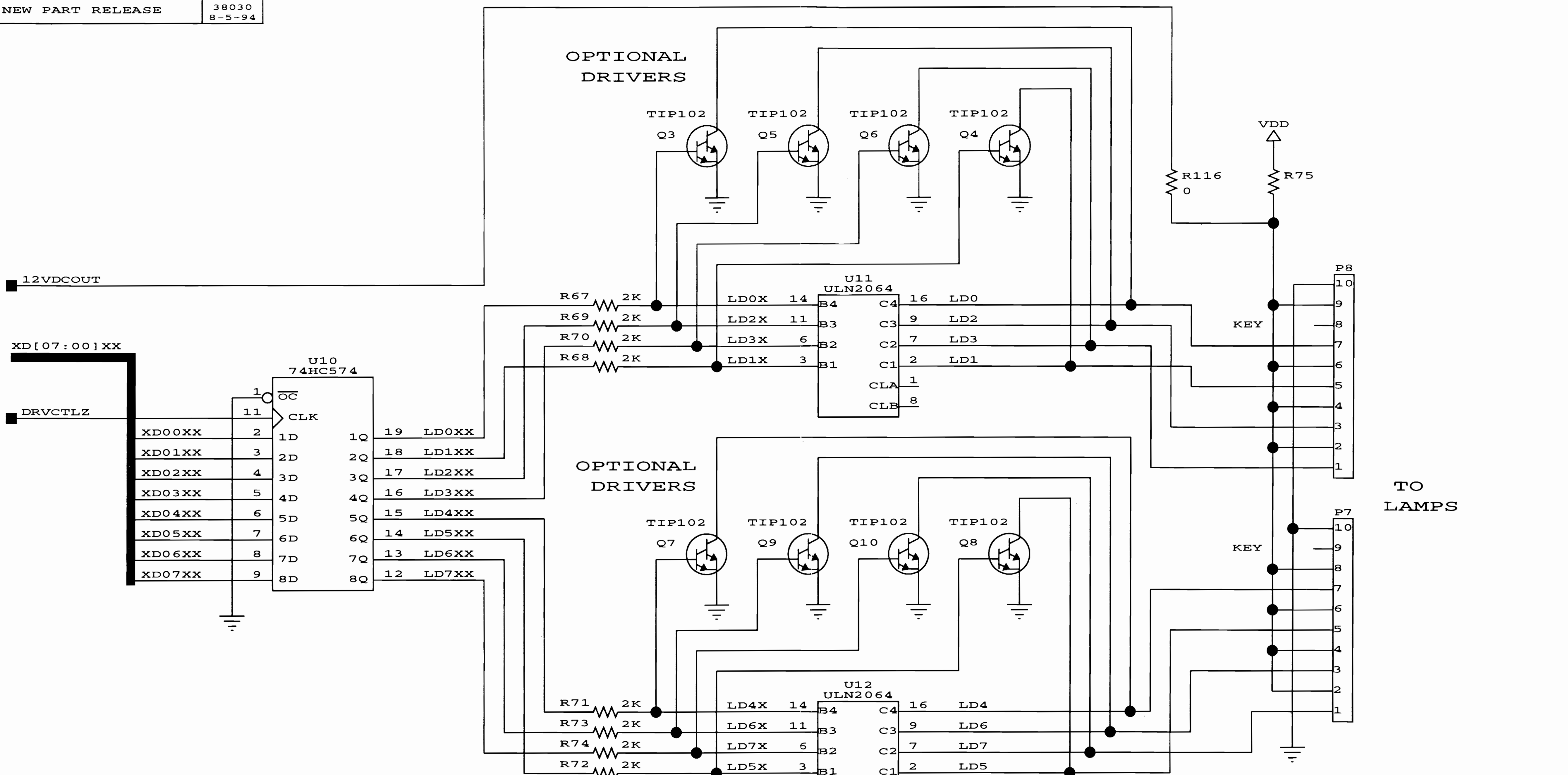
INFORMATION CONTAINED HEREIN IS CONFIDENTIAL PROPERTY AND MAY NOT BE USED OR DISCLOSED WITHOUT EXPRESS WRITTEN CONSENT FROM THE COMPANY.

PROJ. ENGR. M.L.	FIRST PROJECT 40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY G.S. DATE 12-30-93	FIRST USAGE A-18004 -40033	
CHECKED DATE	SHEET 4 OF 10	TITLE WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER 16-9677 REV. —



REV
DESCRIPTION OF CHANGE
ECN NO DATE
-
NEW PART RELEASE
38030 8-5-94
DRIVEFB
R42 150K
+30V
C35 .1UF
C36 100UF
D5 MR501
U6
4 LM12
IOUT
R40
NOT USED
IOUTZ
R41 75K
C34 .1UF
D6 MR501
C37 .1UF
100UF C38
-30V
R43 100K
DRVMON +30V TO 0V DC
R44 100K
R45 33K
A2DCH1
+4V TO 0V DC
R46 10K
DRIVEOUT
P10
TO WHEEL MOTOR
VDD
R47 0 OHM
P5
A2DCH2X
A2DCH3X
A2DCH4X
A2DCH5X
A2DCH6X
A2DCH7X
A2DCH8X
A TO D INPUTS
R48 100K
R49 100K
R50 33K
R51 10K
A2DCH2
R52 100K
R53 100K
R54 33K
R55 10K
A2DCH3
R56 100K
R57 100K
R58 33K
R59 10K
A2DCH4
R60 100K
R61 100K
R62 33]K
R63 10K
A2DCH5
R64 10K
A2DCH6
R65 10K
A2DCH7
R66 10K
A2DCH8
WHEEL 5
1-14-1994_12:12
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PROJ. ENGR.
M.L.
FIRST PROJECT
40033
DRAWN BY DATE
G.S. 12-30-93
FIRST USAGE
A-18004 -40033
CHECKED DATE
APPROVED DATE
SHEET
5 OF 10
WILLIAMS ELECTRONIC GAMES INC.
MIDWAY MANUFACTURING COMPANY
3401 N. CALIFORNIA AVE.
CHICAGO, ILL.
TITLE
WHEEL DRIVER BOARD
PART NUMBER
16-9677
REV.
—

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94



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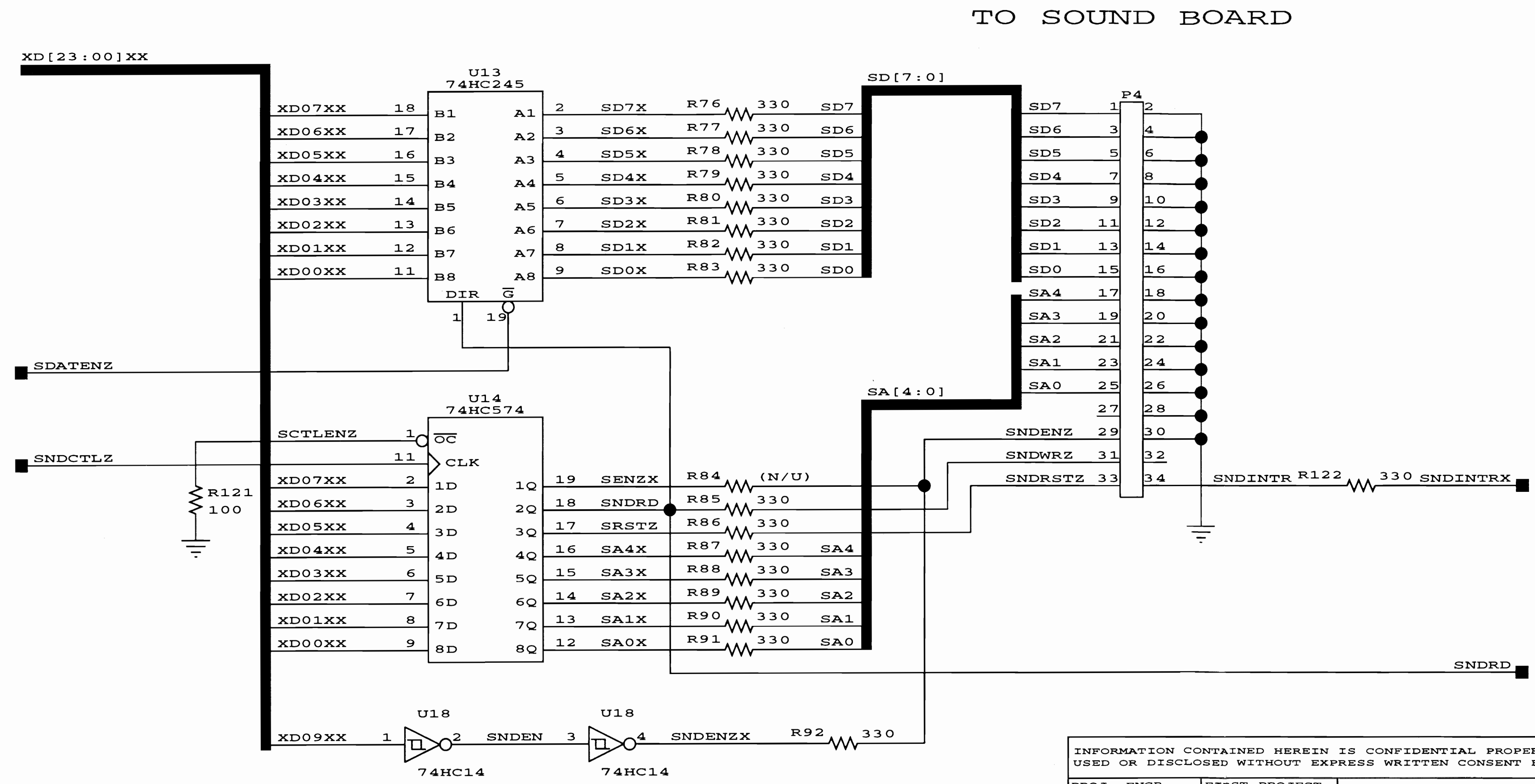
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PROJ. ENGR. M.L.
FIRST PROJECT 40033
DRAWN BY G.S. DATE 12-30-93
FIRST USAGE A-18004 -40033
CHECKED DATE
APPROVED DATE
SHEET 6 OF 10

WILLIAMS ELECTRONIC GAMES INC.
MIDWAY MANUFACTURING COMPANY
3401 N. CALIFORNIA AVE.
CHICAGO, ILL.

TITLE: WHEEL DRIVER BOARD
PART NUMBER 16-9677
REV. —

REV	DESCRIPTION OF CHANGE	ECN NO DATE
–	NEW PART RELEASE	38030 8-5-94

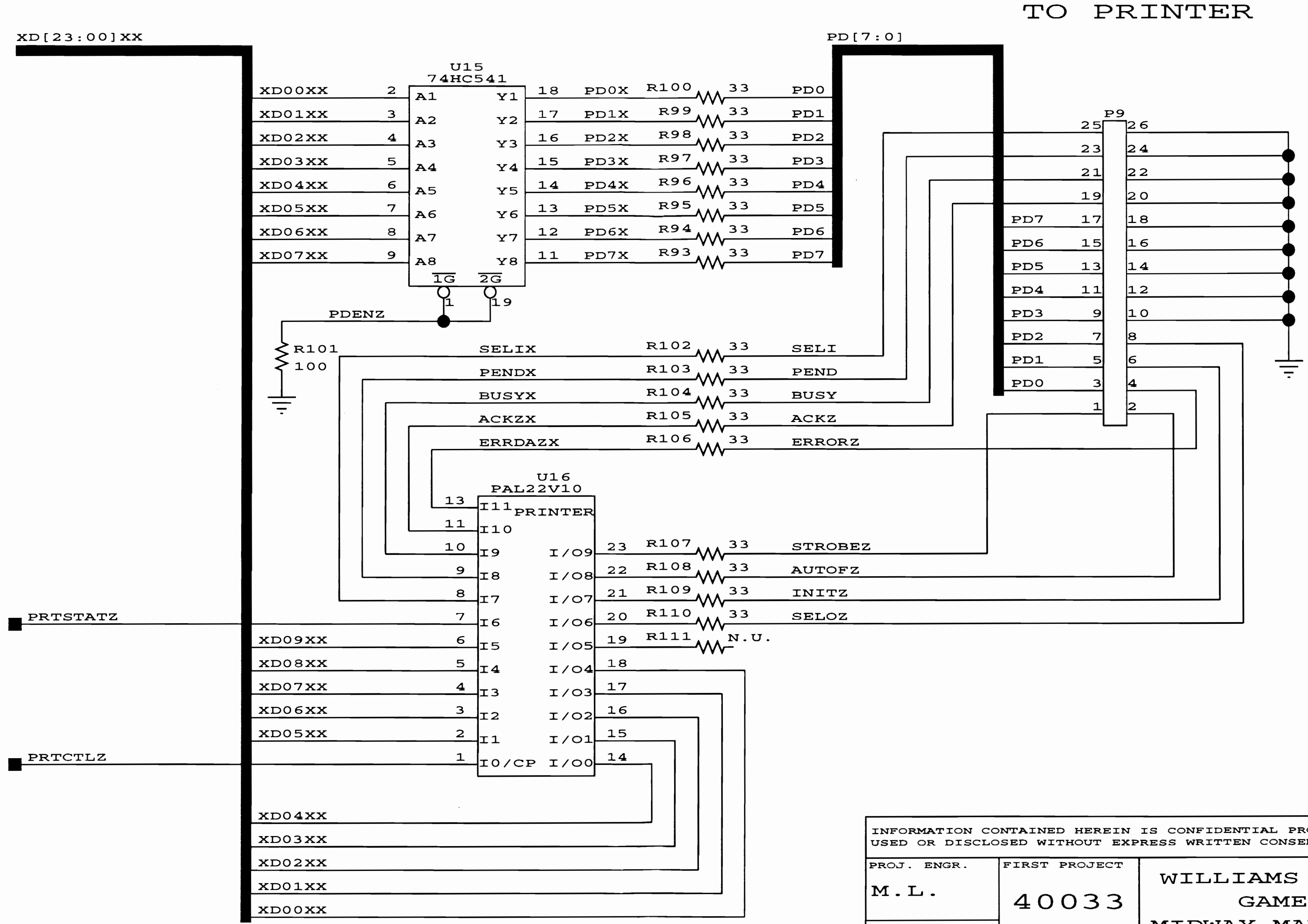


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PROJ. ENGR. M.L.	FIRST PROJECT 40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY G.S. DATE 12-30-93	FIRST USAGE A-18004 -40033	
CHECKED DATE	SHEET 7 OF 10	TITLE WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER 16-9677 REV. —

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94

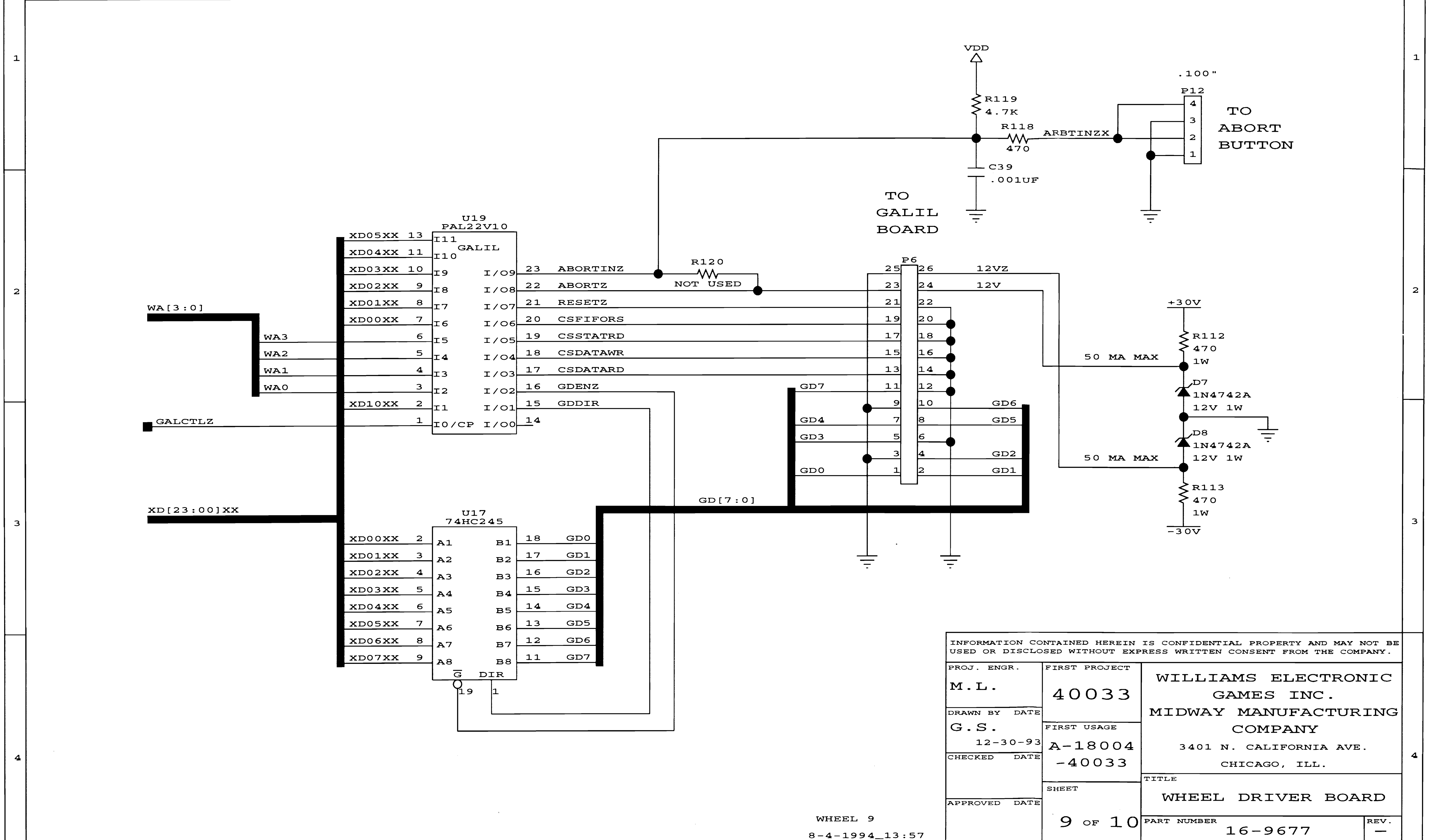


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PROJ. ENGR. M.L.	FIRST PROJECT 40033	WILLIAMS ELECTRONIC GAMES INC. MIDWAY MANUFACTURING COMPANY 3401 N. CALIFORNIA AVE. CHICAGO, ILL.
DRAWN BY G.S. DATE 12-30-93	FIRST USAGE A-18004 -40033	
CHECKED DATE	SHEET 8 OF 10	TITLE WHEEL DRIVER BOARD
APPROVED DATE		PART NUMBER 16-9677 REV. —

WHEEL 8
12-30-1993_11:32

REV	DESCRIPTION OF CHANGE	ECN NO DATE
-	NEW PART RELEASE	38030 8-5-94



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PROJ. ENGR. M.L.

DRAWN BY G.S. DATE 12-30-93

CHECKED DATE

APPROVED DATE

FIRST PROJECT 40033

FIRST USAGE A-18004 -40033

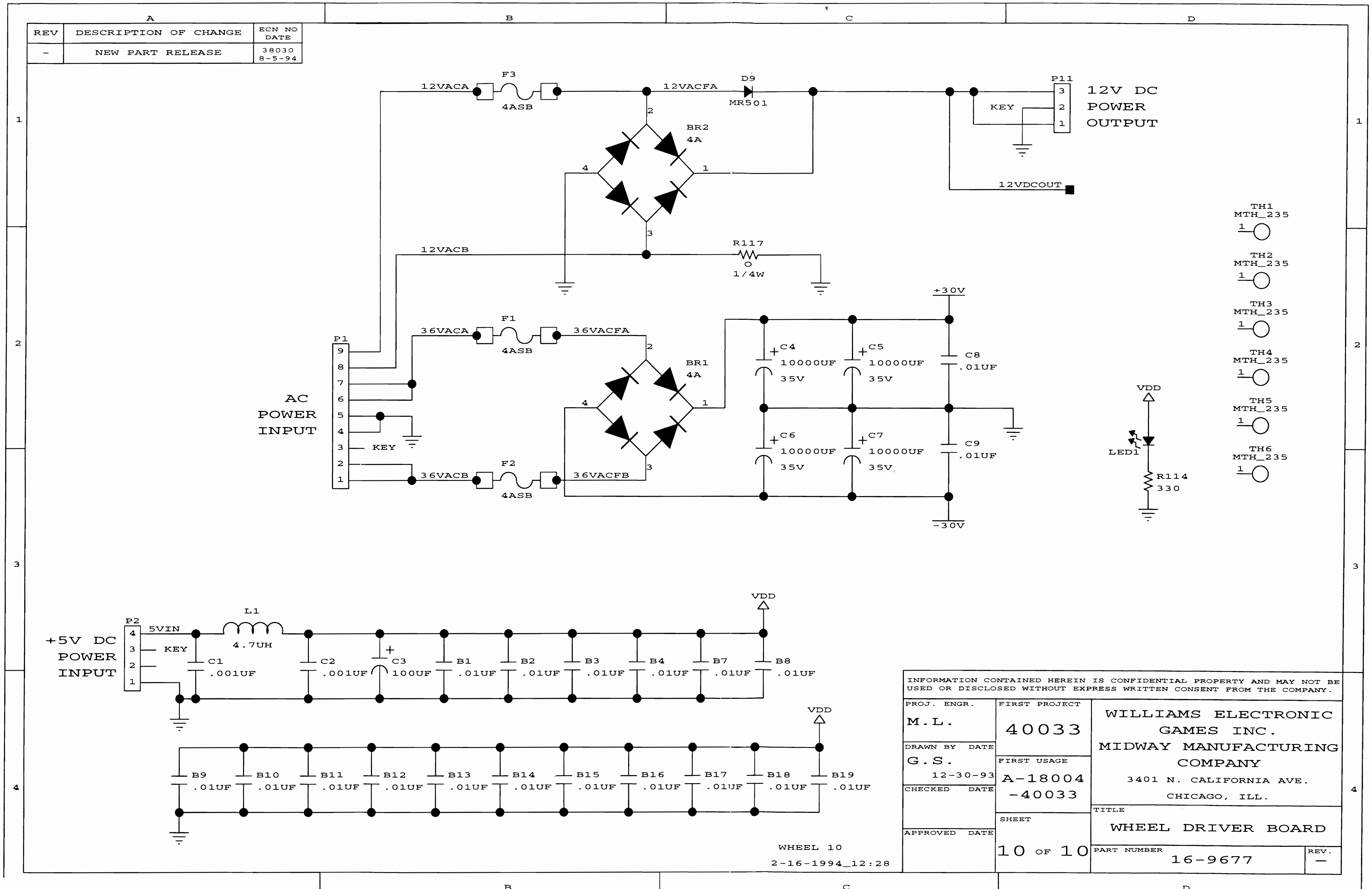
SHEET 9 OF 10

WILLIAMS ELECTRONIC GAMES INC.
MIDWAY MANUFACTURING COMPANY
3401 N. CALIFORNIA AVE.
CHICAGO, ILL.

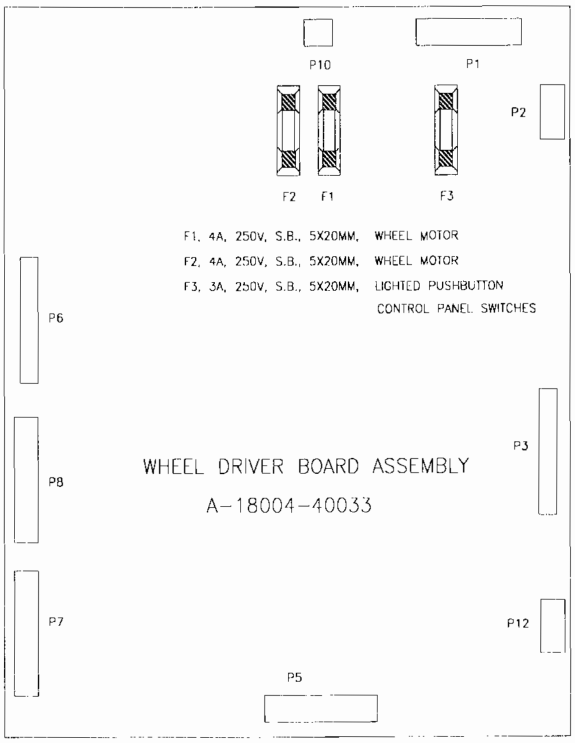
TITLE WHEEL DRIVER BOARD

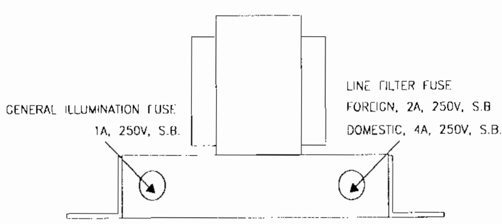
PART NUMBER 16-9677

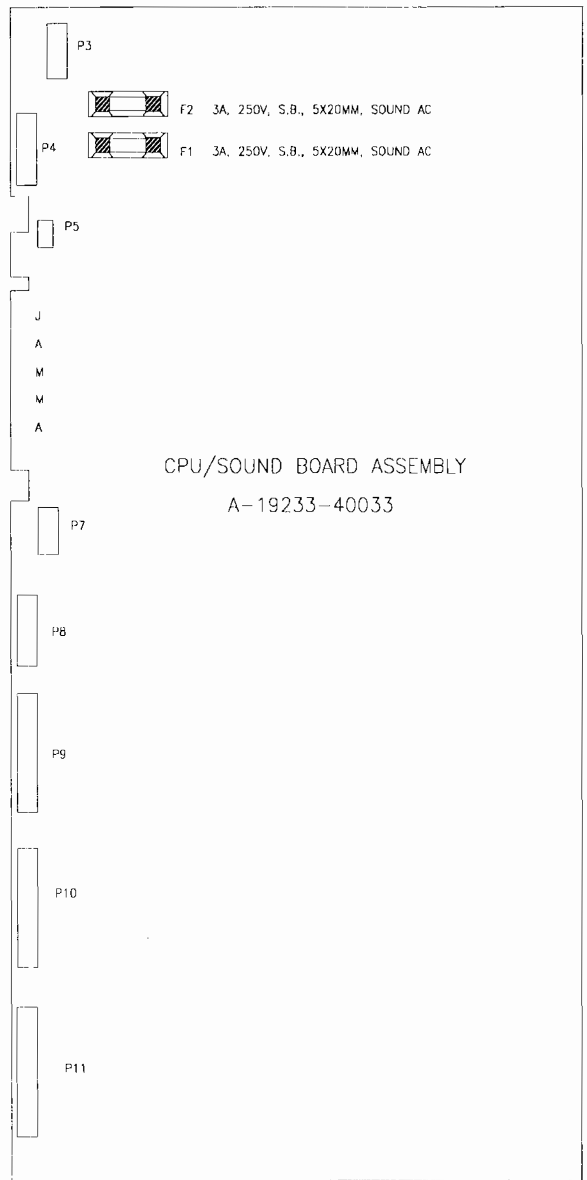
REV. —


REV | DESCRIPTION OF CHANGE | ECN NO DATE
- | NEW PART RELEASE | 38030 8-5-94
12VACA
F3
4ASB
12VACFA
D9
MR501
BR2
4A
P11
12V DC
POWER
OUTPUT
KEY
12VDCOUT
12VACB
R117
0
1/4W
TH1 MTH_235
TH2 MTH_235
TH3 MTH_235
TH4 MTH_235
TH5 MTH_235
TH6 MTH_235
+30V
P1
36VACA
F1
4ASB
36VACFA
BR1
4A
AC
POWER
INPUT
KEY
36VACB
F2
4ASB
36VACFB
C4 10000UF 35V
C5 10000UF 35V
C8 .01UF
C6 10000UF 35V
C7 10000UF 35V
C9 .01UF
-30V
VDD
LED1
R114
330
P2
5VIN
L1
4.7UH
+5V DC
POWER
INPUT
KEY
C1 .001UF
C2 .001UF
C3 100UF
B1 .01UF
B2 .01UF
B3 .01UF
B4 .01UF
B7 .01UF
B8 .01UF
B9 .01UF
B10 .01UF
B11 .01UF
B12 .01UF
B13 .01UF
B14 .01UF
B15 .01UF
B16 .01UF
B17 .01UF
B18 .01UF
B19 .01UF
WHEEL 10
2-16-1994_12:28
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PROJ. ENGR. M.L.
FIRST PROJECT 40033
DRAWN BY G.S. DATE 12-30-93
FIRST USAGE A-18004 -40033
CHECKED DATE
SHEET 10 OF 10
APPROVED DATE
WILLIAMS ELECTRONIC GAMES INC.
MIDWAY MANUFACTURING COMPANY
3401 N. CALIFORNIA AVE.
CHICAGO, ILL.
TITLE WHEEL DRIVER BOARD
PART NUMBER 16-9677
REV. -

FUSES


P10
P1
P2
F2
F1
F3
F1, 4A, 250V, S.B., 5X20MM, WHEEL MOTOR
F2, 4A, 250V, S.B., 5X20MM, WHEEL MOTOR
F3, 3A, 250V, S.B., 5X20MM, LIGHTED PUSHBUTTON CONTROL PANEL SWITCHES
P6
P8
P3
WHEEL DRIVER BOARD ASSEMBLY
A-18004-40033
P7
P12
P5


GENERAL ILLUMINATION FUSE
1A, 250V, S.B.
LINE FILTER FUSE
FOREIGN, 2A, 250V, S.B
DOMESTIC, 4A, 250V, S.B.


P3
F2 3A, 250V, S.B., 5X20MM, SOUND AC
P4
F1 3A, 250V, S.B., 5X20MM, SOUND AC
P5
J
A
M
M
A
CPU/SOUND BOARD ASSEMBLY
A-19233-40033
P7
P8
P9
P10
P11

WARNINGS & NOTICES

Warning

USE OF NON-MIDWAY PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE! USE ONLY MIDWAY AUTHORIZED PARTS.

* For safety and reliability, substitute parts and modifications are not recommended.
* Substitute parts or modifications may void FCC type acceptance.
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Warning

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Warning

Prevent shock hazard and assure proper game operation. Only plug this game into a properly grounded outlet. Do not use a cheater plug to defeat the power cord's grounding pin. Do not cut off the ground pin.

Notice

When MIDWAY ships a game, it is in compliance with FCC regulations. Your sticker is proof. If the sticker is missing or damaged, legal repercussions to the owner or distributor of the game may result. If your game does not contain an FCC sticker, call MIDWAY immediately.

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